Irving K. Pond, Des.

Lorado Taft, Sculpt.

THE INLAND ARCHITECT AND NEWS RECORD

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THE INLAND ARCHITECT AND NEWS RECORD

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A Government Exhibit at Paris in 1900.

It is time that the Government of the United States arranged definitely for representation of our industries and art at the Paris Exposition of 1900. As a rule such matters are left until the last moment, and then sent through with a rush, and the result is worse than if the work had been left entirely alone. France came to our Exposition in 1893 fully represented and equipped, showing us her best manufactures and greatest art advancement, and all under the control of men who fitly represented that great nation. We would earnestly hope that the suggestion already made by Senator Thurston, who as chairman of the Special Committee of the Senate upon International Expositions is showing some activity in the matter, may be adopted. His recommendation is the appropriation of half a million of dollars for exhibition purposes, and the salaries and expenses of five commissioners. This is in the right direction, but is too moderate for so great a nation at the end of so great an epoch. Our special interest lies in the direction of what Secretary Gage will do by way of securing designs for a representative building. He saw the result of leaving it to the government architect when the one distinctive blot upon that grand architural vista at the Fair was the building erected by the United States Government. We are sure he will not allow such a mistake to be repeated, and hope he will call to his aid, and that immediately, the best and most thoroughly capable minds in the architectural profession, and by a competition that will be purely for glory and adjudicated upon honor, procure a perfect representation of our architectural advancement. We owe all this to ourselves as a nation, and to France for the superb way in which she was represented in 1893.

Architects' License Law Passed in Illinois.

As announced in this journal last month, to the architects of Illinois is due the credit of securing the passage of the first law providing for the examination and licensing of architects and regulating the practice of architecture as a profession yet secured by any State in the Union. Not that those in other States have not labored just as arduously to secure this much-needed reform, for during the past ten years bills of like import have been presented for passage to the legislatures of most of the States. It is not forgotten how the lamented W. W. Carlin labored in New York State, and only failed through the venality of its chief executive, or how the architects of Texas pressed the cause of the profession and the people before many legislatures, but the long-fought battle has been won in Illinois and the precedent established. The bill was introduced by Mr. Nothnagel, an architect of Chicago, who was elected to the legislature last year, it being his avowed purpose to secure if possible the passage of such an act. In this he was ably supported by the Illinois Chapter of the American Institute of Architects, a committee of which body having prepared the bill, and the Chicago Architects' Business Association, of both of which Mr. Nothnagel is a member. After several months of labor in its behalf the bill was finally passed without a change from the first draft submitted by the Chapter. It provides that the Governor shall appoint a State board of examiners composed of five members, all of whom shall

belong to the faculty of the Illinois State University, and the others shall be architects residing in the State who have practiced the profession more than ten years. It is in this feature that the greatest importance lies, and the Governor will be obliged to exercise the greatest care in the selection and appointment of the board of examiners. They must be men of undoubted integrity and with reputations well established; and that no practitioner may object to coming before them in compliance with the law, they must be selected from those most esteemed for designing and structural knowledge. The Chapter and its representative have done their work well. It now lies with the Governor and his appointees to make this, the first legal recognition of the profession as a profession in the United States, both beneficial and popular with the public. The bill was published in full in the April number of this journal.

Government Employs Private Architects.

Much comment has been excited by the report that the Secretary of the Treasury is going to enforce the Tarnsey act and open the government work to competition among architects generally. No business man could have been appointed to the Secretaryship better fitted to cope with the vexing problem of governmental architecture than is Mr. Gage. Besides rare executive ability and an artistic temperament, his experience in the World's Fair management, the practical demonstration offered him there of the benefits to be derived from diversity of talent being employed, and his observation of the harmonious coöperation of that talent under one executive are of incalculable advantage to him in settling the affairs of a subdepartment that under the old régime has been the cause of more public criticism and personal annoyance to his predecessors than any one of the hundred other branches of the Treasury. We believe that Mr. Gage intends using his discretionary prerogatives in enforcing the better features of the Tarnsey act to the exclusion of the many objectionable ones, and is giving the matter most earnest study besides seeking the advice of the most esteemed members of the profession. It can be premised, however, that an architect whose design is selected for a building will have such charge of the work as is really an architect's privilege; he will prepare all drawings and duplicates, and shall superintend the work in so far as to see that the spirit of his design is carried out, but the preparing of specifications, letting of contracts, inspection of work and materials, adjudication of disputes and other legal matters, and the settling of contracts will remain vested in the department, and will be done by the Supervising Architect's office, in consultation with the architect of the building. As the act reads, the competitors for each building will be limited, five competitors being selected and the successful architect being given the work. As soon as the judges for the first competition are appointed, the act as signed by President Harrison will be published. That, as seems to be the case, no fund or means of compensating the board of judges or the unsuccessful competitors has been provided for by the Tarnsey bill in the governmental competitions for government building need not deter the Secretary of the Treasury from placing the law into effect at once. There are enough prominent and capable members of the American Institute of Architects interested in seeing this great reform instituted who would gladly serve without compensation, at least until such time as proper legislation can be enacted to provide for such compensation.

A Government Representative Sent to Brussels.

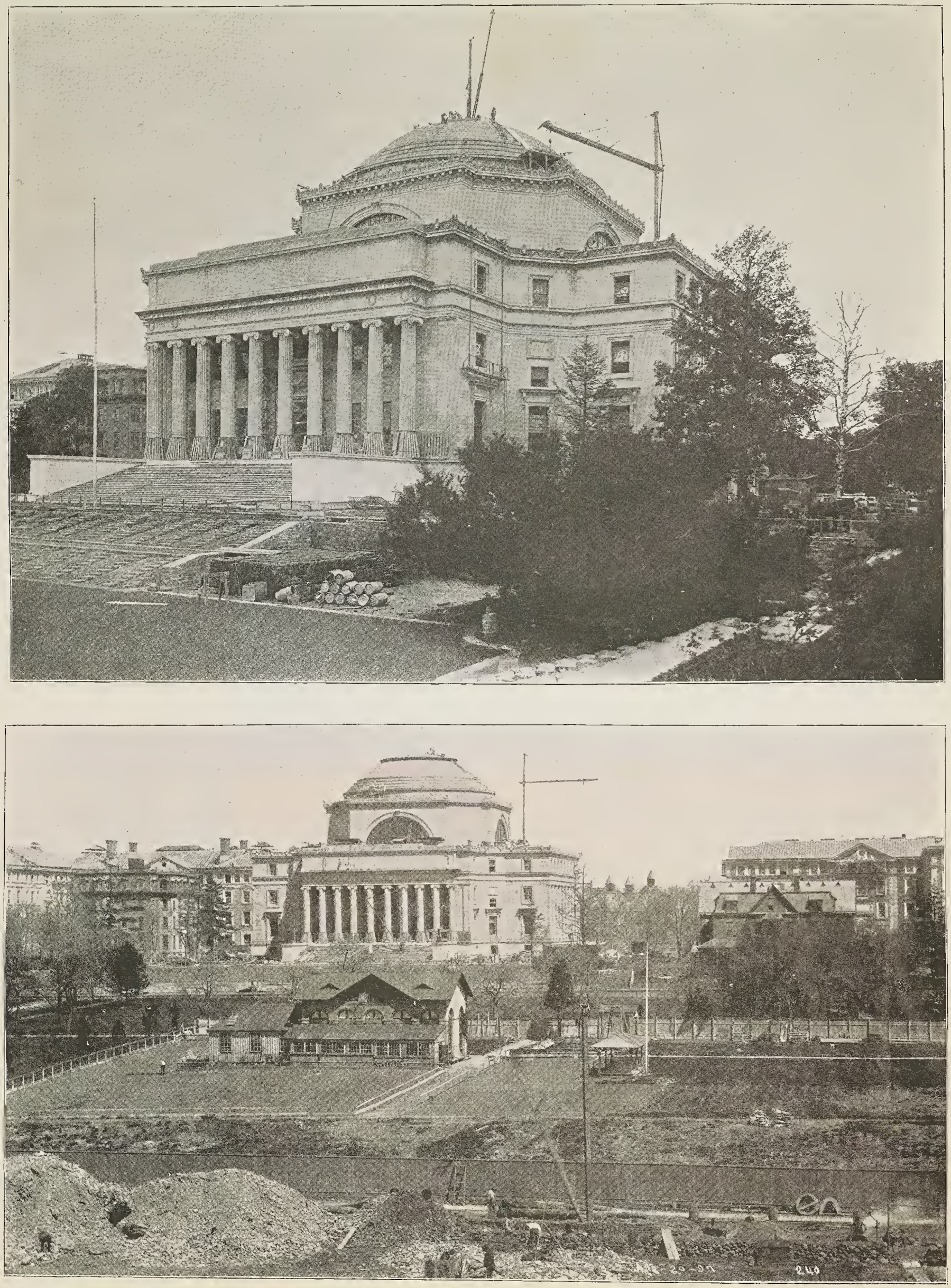
It has been decided that Mr. H. O. Totten, a young man in the Supervising Architect's office, at Washington, will be appointed to represent the United States at the International Convention of Architects at Brussels. We know little regarding the gentleman except that he is young, of artistic temperament, and a protégé of Mr. Aiken. We recently recommended that the Government send to that convention a representative who could speak for the profession in this country. This would require an old and able practitioner, one well versed in architectural affairs, and of sufficient prominence to lend dignity to the office of representative. We doubt if Mr. Totten, whatever his talent as a draftsman and prospective architect may be, is in possession of any of these qualifications. But in all friendliness we would suggest that he brush up his French, look wise, and say little, for he will have to rub shoulders with a Waterhouse, a Baron Müller, a Delançon, and other old-world celebrities.

Supervising Architect's Examination Proposed.

Since the resignation of Supervising Architect of the Treasury William Martin Aiken, there has, as usual, been a rush of applicants for the position. It seems to be the disposition of the Secretary of the Treasury to fill this office through a competitive examination. It is doubtful if the Secretary will call for such an examination by applicants for some time, as the chief executive of the office, Mr. C. E. Kemper, who has been acting in Mr. Aiken's place since that gentleman's resignation, has created an impression of thorough capability, his four years' experience fitting him for the work of reorganization under the new order of things, its future province being purely executive and supervisory.

One Effect of Proposed Adoption of Tarnsey Law.

Some architects will not relish one effect of the proposed enforcement of the Tarsney act. Heretofore post offices and other public buildings have generally been superintended by local architects appointed through the influence of the congressman of the district the building was in, but since it has been decided to reduce the working force of the Supervising Architect's office, old and faithful employes of that office have been taken care of by giving them those berths. Mr. J. W. Roberts and Mr. Lee Ullery, both of Illinois, and now of the computor's division of the Supervising Architect's office, go respectively to San Francisco and to Denver, the former to look after the fifteen-year, four-million-dollar post office, and the latter to attend to almost as lengthy duties at the Denver mint, both good places of over $2,500 a year, and both men are thoroughly competent, as they are familiar with the routine of government work and know exactly what is needed and how to go about it. Incidentally, they will save the government much expense in carrying mail if not in the execution of their duties, as it generally took a year's time at about three letters a day for an outsider to get posted on how he was to draw his pay, make triplicate vouchers and other necessary red-taped routine work in conformity with the regulations experience has dictated in government work.



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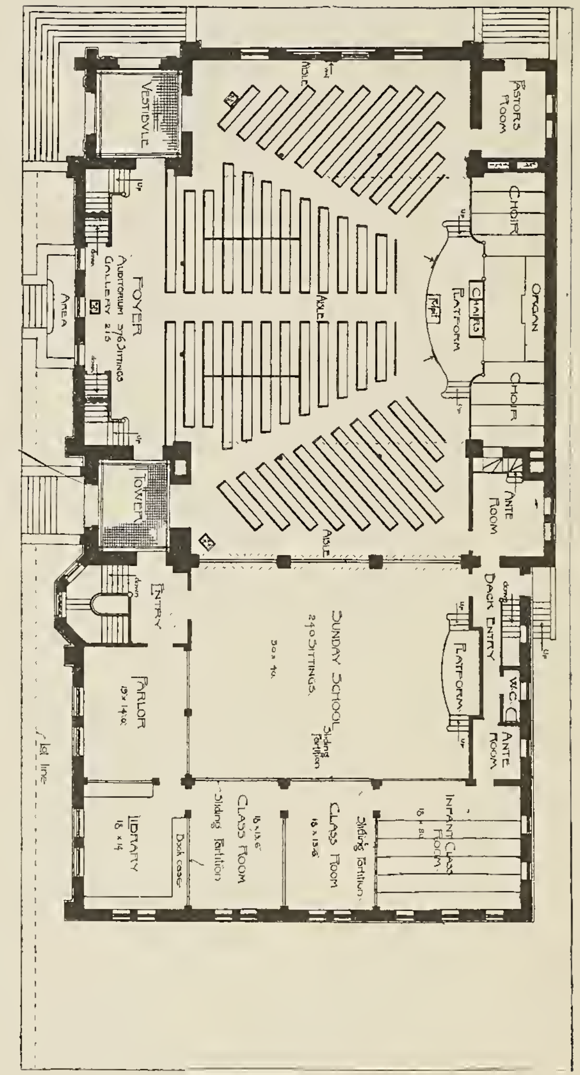

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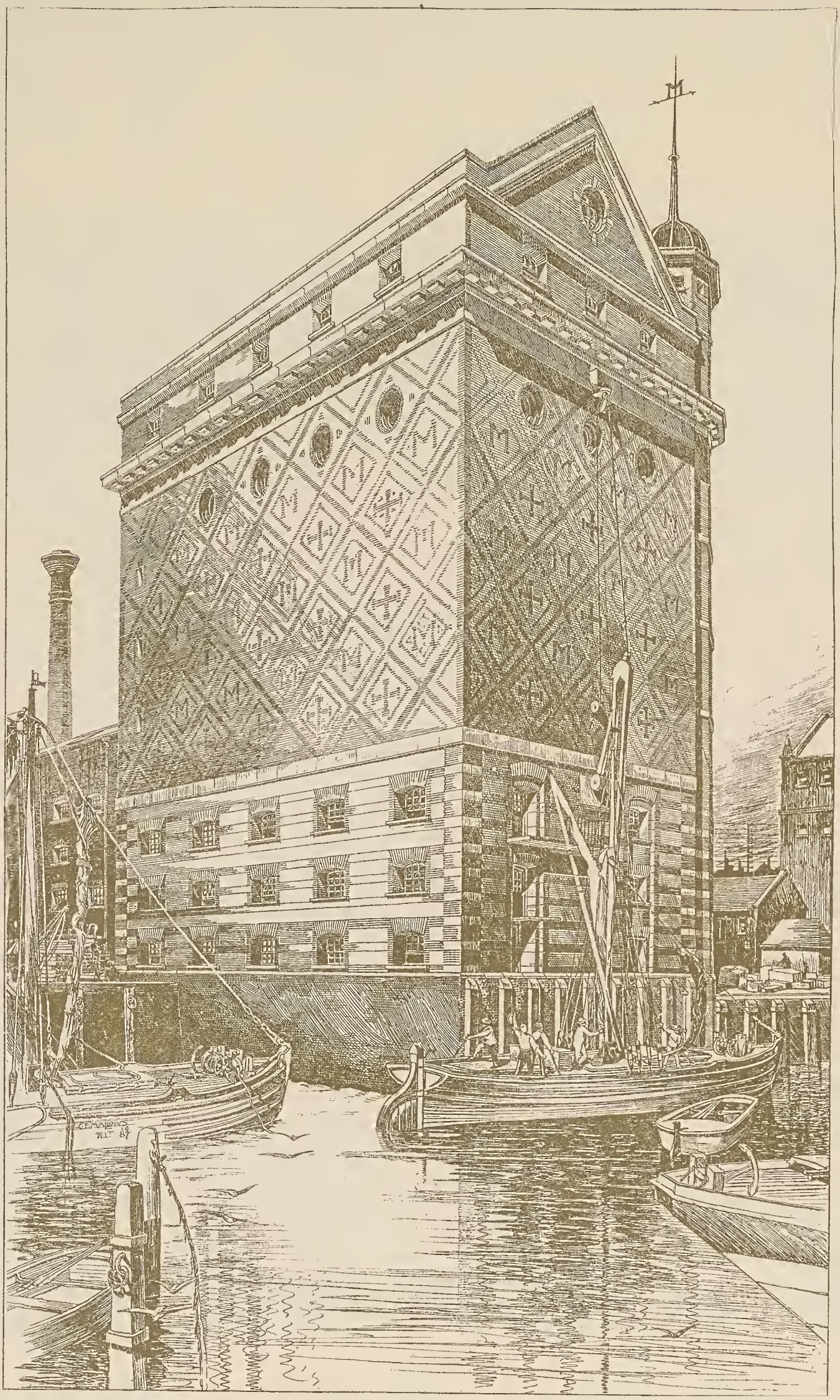
A. M. EDELMAN, ARCHITECT.



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A GRAIN SILO AT GREENWICH, ENGLAND.

ASTON WEBB, ARCHITECT.

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A CHICAGO RESIDENCE.

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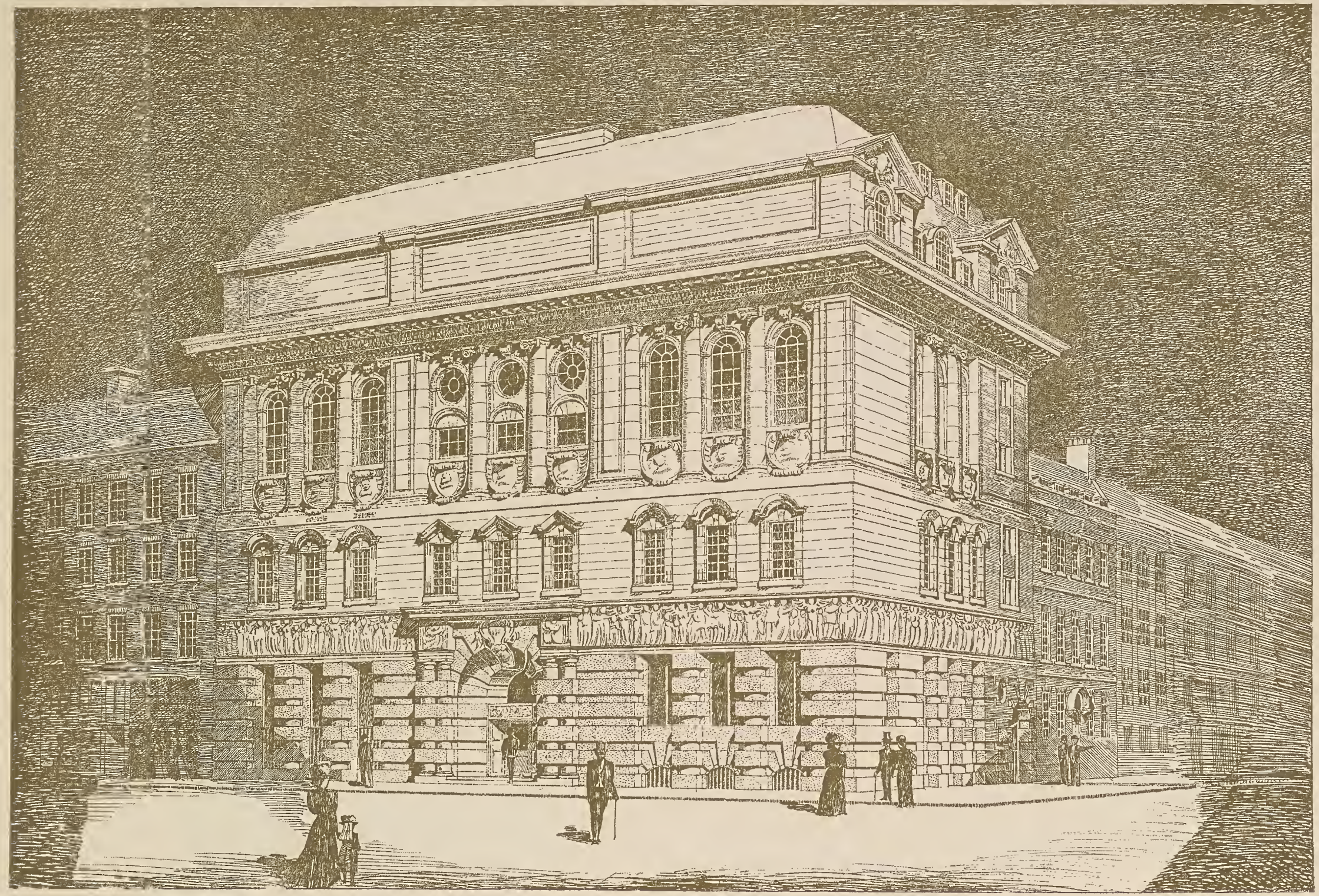

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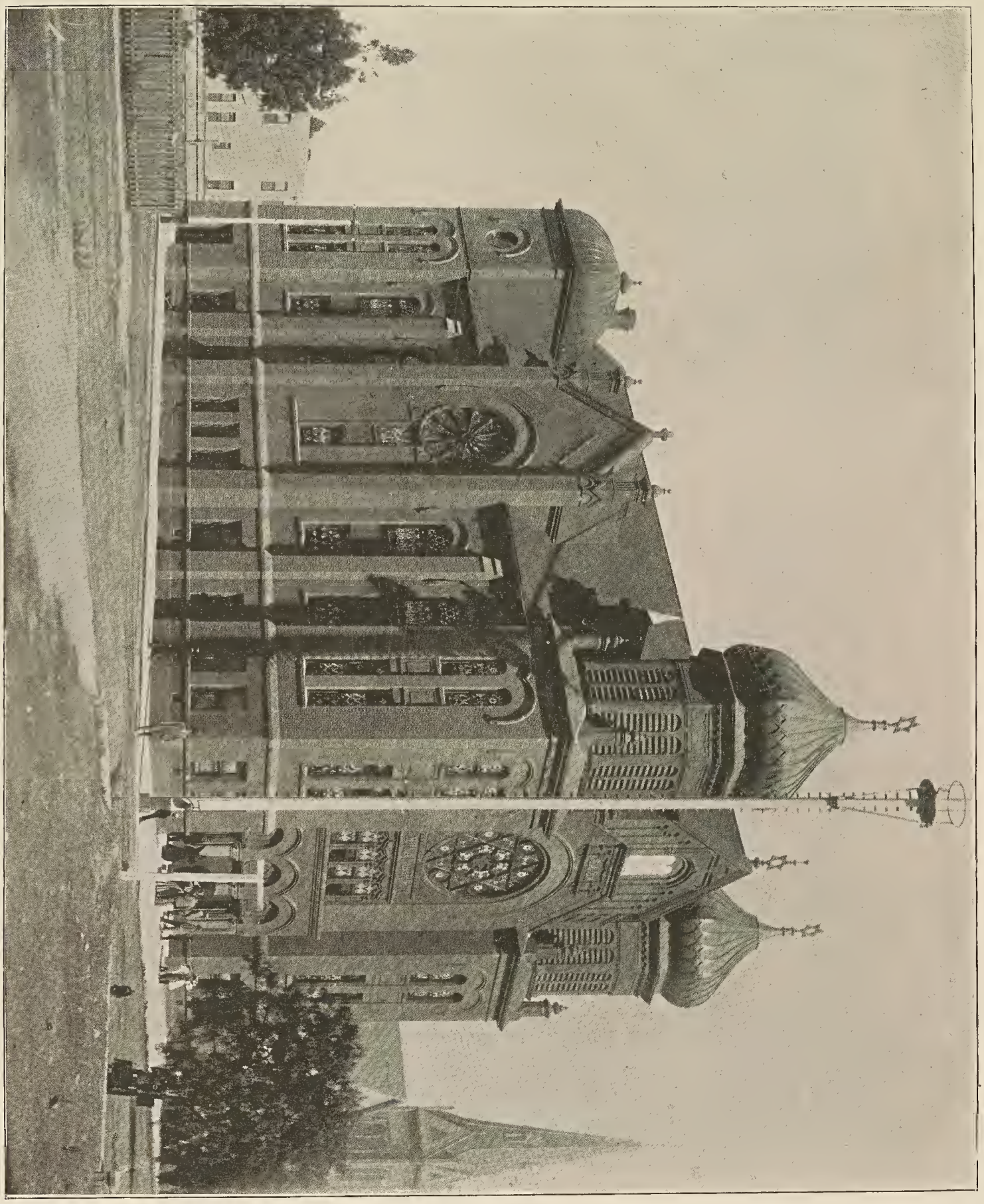

SYNAGOGUE B'NAI BRITH, LOS ANGELES, CALIFORNIA.

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IN ILLUSTRATION OF ARTICLE ON "THE MODERN DOME," BY PROF. A. D. F. HAMLIN.

THE MODERN DOME.*

BY A. D. F. HAMLIN.

AS the broad dome of the new library of the University† rises daily higher above the surrounding mass, the value and beauty of this feature, both as a part of the structure it crowns, and as an element in the landscape, becomes increasingly apparent. A short distance away in one direction the cupola of St. Luke's Hospital challenges attention by the contrast which its more slender and loftier proportions offer to the profile of the library dome; while to the northwest the great conical roof, covering the dome of the Grant mausoleum, furnishes a third variation on the theme of the dome as an external feature. The three together introduce into the landscape silhouette a much-needed element. Hitherto spires, tall office buildings and chimneys have furnished almost the only varieties of upward breaks in the profile of New York, which has been singularly lacking in interesting outlines, especially in the uptown region.

The use of the dome, as a commanding feature of external design, is an essentially modern idea in European and Western architecture. Neither the Romans nor the Byzantine builders, who made of the hemispherical vault one of the most important elements in their architectural design, attempted to give it any importance as an external feature. The dome of the Pantheon at Rome (119 A. D.) is externally almost invisible from the ground, except at a great distance. That of Hagia Sophia at Constantinople, the masterpiece of Byzantine art, dating from 556,‡ however impressive by its size, has absolutely nothing to suggest that its designers gave any thought to its exterior aspect. The five domes of St. Mark's at Venice required, to please the taste of the fifteenth century, and to bring them into some harmony with the splendor of the façade, the addition over them of the present wooden and lead-covered cupolas, which date from the fifteenth century. The exterior treatment of the domes of St. Front at Perigueux (1047) is a modern addition, and all the great domes of Italian churches and baptisteries erected previous to the Renaissance, are either utterly insignificant to external view, or covered by wooden domes or masked by tower-like edifices, wholly unrelated to the form or structure of the vault beneath them. Even the thousand domes of Constantinople, striking and effective in their aggregate effect upon the silhouette of that marvelous city, are individually commonplace and bare externally.

The earliest examples we have of the dome treated as an element in the exterior decorative effect of an architectural design, appear to be those erected by the Arabs in northern Africa, chiefly in Cairo, during the closing years of the Fatimite dynasty, as in the mosque of Barkouk (1149 A.D.); and during the Ayûb dynasty, as in the great Mâristân Kalaoun (1284–1318) and the beautiful tombs of the Karafah. This use of the dome was associated almost exclusively with the idea of sepulture and was a natural consequence of the purpose which dictates the erection of a mausoleum, namely, that of proclaiming to the world, by the external splendor of the monument, the honor of the distinguished dead interred within. These Arabic domes are accordingly given great height in proportion to their diameter; and by the refined and subtle curvature of their profiles as well as by the extraordinary richness of their suface decoration, they produce a most striking architectural effect, not easily surpassed in its way. All, or nearly all of the domical mosques of Cairo are tomb-mosques, erected to commemorate deceased Khalifs whose sarcophagi are placed within the mosque inclosure or even under the lofty dome. But these domes, thus designed for external effect, present internally little of the appearance of the dome as used by the Roman and Byzantine builders. Their small diameter and great height suggest rather the effect of "lanterns," such as the Gothic builders of France and England were wont to erect over the crossings of their great churches, as in St. Ouen at Rouen. The simple majesty of the broad hemispherical vault is wholly wanting, and its place is taken by the sumptuousness of complicated and minute decoration by "stalactite" ornament, gilding and color. There was no attempt to combine in one design the conflicting conceptions of the broad, simple hemispherical vault of low curvature for interior effect, and the narrow lofty profile required for external impressiveness.

II.

This conflict between the demands of internal and external effect is the *crux* of domé design. It is this difficult and, at first sight, insoluble, problem which the architects of the Renaissance in Italy undertook to solve. It is the recognition of this problem, and the way in which it was handled, that distinguish Brunelleschi's dome of the Cathedral of Florence (1420–1464) as the initial triumph of the new taste in architecture, quite as much as its marvelous structural design and execution. The mighty octagonal vault 143 feet in diameter, rises internally to a height of nearly 280 feet, not counting the lantern. It is constructed with an inner and an outer shell, connected by eight major and sixteen minor ribs; the exterior profile being slightly steeper and more acute than the interior. The whole is crowned by a lofty lantern. This last feature is the peculiar glory of the design. The small finials which terminate the Arab domes are an insignificant and trivial capping for the structure beneath. The Italian recognized the necessity of an adequate and richly decorative feature to gather up the lines of the eight angle-ribs of the exterior dome, and to fitly crown its imposing mass. Thenceforward no important dome was erected in Italy, or indeed in Europe, without this feature until within a comparatively recent period.

But the problem of reconciling the conflict between the demands of external and internal effect was not solved. Impressive as the Florentine dome is by its vastness and height internally, the effect it produces is unsatisfactory. It is too high and too dark; it overwhelms and crushes the interior architecture of the nave and chapels below. The low-curved dome of Hagia Sophia, which is but 107 feet in diameter, and only 180 feet high, is far more impressive. Nor is the exterior of Brunelleschi's dome satisfactory. Its bareness, heaviness and size are wholly out of scale with the cathedral to which it was added. But it initiated a series of experiments in dome-building which covered Italy with splendid monuments. The dome became the leading feature of Italian Renaissance church design, controlling the plan almost as completely as did the vaulting in the development of Gothic architecture. The only possible principle to be applied to the problem was finally discovered and, during the seventeenth and eighteenth centuries, was universally recognized. It is the domes built on this principle which alone redeem a majority of these late Italian churches from the utter badness of their vulgar details.

This principle was the recognition of the impossibility of meeting both the demands of the problem by one and the same structure. Accordingly, there was provided for interior effect a dome of moderate height and low curvature, in scale with the treatment of the nave and choir, and not too lofty to be reached over its whole surface by the direct or diffused light which pervaded the church. Outside and above this rose a drum, decorated with pilasters or engaged columns, and carrying an entirely independent external dome. This was in many cases of wood covered with lead or tile, and bore a graceful lantern, also of wood. Nearly all the Italian churches erected subsequently to the middle of the sixteenth century are adorned with domes on this plan.

It must be evident that once the principle is recognized of the separation of the inner and outer domes it becomes difficult, if not impossible, to set limits to that separation. The two surfaces have become independent structures, whose form and design are controlled by wholly distinct and diverse considerations. The inner dome may be made as low as possible, consistently with good architectural effect. The outer dome may be lifted a hundred or two of feet higher into the air, in order the better to clear the mass of the surrounding structure when seen in perspective from below. The two domes may be, and generally are, of different materials. The lower one may be of masonry — a true hemispherical or domical vault — the upper one of wood or iron, serving as a decorative roof to cover and protect the vault below. The only considerations which control both alike are the fact that, as they are usually carried upon the same substructure of piers and arches, they must be of approximately the same diameter; and that they naturally offer to view the same architectural style and scale of parts. Beyond this there is no closer relation between them than that between the central spire or lantern of a Gothic church and the vaulting beneath it over the crossing of nave and transepts. The one, in each case, is a ceiling, the other a roof. There is no absolute reason, in logic or æsthetics, why both should have similar forms; and the French Gothic builders, the most severely logical of all artistic builders in the development of their architectural forms, found no contradiction or want of sense whatever in putting a lofty and tapering spire as a decorative roof over the vaulted ceiling of the bell chamber in a church tower, nor in rearing above the intersection of the nave and transepts a lofty square or octagonal lantern, two hundred feet high. The reproach sometimes cast upon the Renaissance architects of the complete separation of the outer from the inner dome in the later examples is therefore a purely abstract and speculative objection, which does not bear the test of careful examination or of practical and artistic considerations. For, since it is in almost all cases — in all cases of long, wide or complex buildings — impossible to make a dome well-designed for interior effect also effective externally, and since the external accentuation of the very important space or rotunda covered by the inner dome is artistically proper and even imperative, the only logical course is to consider the two requirements independently. The use of a domical form for the outer covering is a matter of artistic expediency, not necessity.

This principle seems, indeed, so obvious that one is constrained to wonder at the tardiness of its recognition by the designers of the Renaissance. Michael Angelo, in the middle of the sixteenth century, failed to realize its importance. The dome of St. Peter's as designed by him is far too lofty internally. Externally it is one of the most original, noble and stupendous creations of architectural art in any age. Its vast size — 195 feet in diameter over all, through the bases of the engaged columns — its fine profile and well-proportioned lantern, and the masterly handling of scale in its various parts, all reveal the work of genius. But the inner and outer shell are too close to each other for the best internal effect.

It was the French architects of the last century who most completely developed the principle outlined above, while, at the same time, they attacked the difficult problem of lighting the internal dome so as to give effect to the paintings which adorned it. This was accomplished by a device of great ingenuity, somewhat theatrical, perhaps, but very successful. An intermediate

* Repriuted from *The School of Mines Quarterly*, Vol. XVIII. January, 1897, and revised by the author, with the addition of Part V, for publication in THE INLAND ARCHITECT.

† Columbia University. New York.

‡ The original dome, built 532–538 A.D., fell in during an earthquake, and was rebuilt about 556 A.D., with a fuller curve.

dome was introduced and decorated with a large painting in the upper part. The inner dome was open at the top, the opening so proportioned as to frame the painting above it for the eye of the spectator on the floor far below. The base of the intermediate dome was pierced with openings, admitting light from the windows in the drum of the exterior or upper dome. This light, reflected upward from the convex outer surface of the lower dome, sufficed to light up amply the picture above, which, seen from the floor, appeared as if painted on the inner dome, the distance between the surfaces being so foreshortened as to be hardly, if at all, perceptible.

This is the system first devised by Jules Hardouin Mansart in the Dôme des Invalides, Paris (1680), and adopted in modified form by Soufflot in the church of Ste. Geneviève (afterward called the Pantheon) in 1754. The dome over the rotunda in the Capitol at Washington is treated in the same way.

The lantern presented another serious difficulty. When the outer dome is of wood it becomes necessary to make the lantern also of wood, unless some means be found of supporting the heavy weight of a stone lanteru without loading it upon the inner dome. This latter, owing to its relatively low curvature and the great height and weight of the intermediate tower required to reach the top of the outer dome before the lantern itself appears, is manifestly ill adapted to sustain the lantern. A wooden lantern, even treated with the elegance which characterizes that of the Invalides, is unsatisfactory; it is at best a counterfeit or a travesty of a structure in stone.

The first solution of this problem, by which a stone lantern was made possible without regard to the material of the exterior dome, was that devised by Sir Christopher Wren in St. Paul's Cathedral (1675–1710). Here a cone of brickwork rises from the circle formed by the meeting of the eight pendentives, forms a contracting drum for the inner dome which it supports and envelopes, and rises above it to form the base of a handsome stone lantern. The wooden exterior dome closes arouud the top of the cone and base of the lantern.

The difficulty in this case, aside from possible objection to the inclined conical-fustum shape of the inner drum, is that the stone lantern looks as if it were carried by the wooden external dome or roof, which is suggestive of an impossibility or at least an absurdity. In the Pantheon at Paris, Soufflot remedied this by making the outer as well as the inner shell of stone, and substituting for Wren's brick cone a structure of parabolic or ovoid section, also of stone, enveloping the inner shell, which was open at the top, and closing over it at a considerable height with a domical surface on which was the painting, lighted through four great arches cut through this ovoid structure. The height and steep curvature of the latter adapted it for the support of the lantern. The combined weight of the three shells, all of masonry beautifully cut, and made as thin and light as possible, is nevertheless enormous, and the original piers began to yield to the terrible strain, by splintering and cracking. The resulting worry and anxiety probably hastened the death of the architect in 1781. Isabelle strengthened the piers, enlarging their section, and there has been no trouble since.

III.

So far we have briefly considered the dome as a true vault of stone or brick. It was inevitable, however, that the architects of the Italian and later of the French Renaissance, preoccupied as they were with beauty of form rather than with questions of structural logic, should in time enter upon a path leading to developments in which appearances alone would be considered, with all the resulting temptation to sham and meretricious display. It is a priuciple universally observable in the history of style development that forms originating in structural design come in time to be used in a purely decorative way, their original significance being entirely lost. So it came to pass with the dome. Originating as a conveuient, economical and effective form of vaulting in masonry, it was treated by the architects of the Renaissance as a decorative ceiling, valuable for the sake of its form and architectural effect, whether built as a vault or not. With the extraordinary development of decoration in stucco and plaster which marked the sixteenth century, and which in the seventeenth and eighteenth degenerated into a vulgar abuse, the practice crept in of executing paneled ceilings in lath and plaster, and then of imitating vaulted ceilings in the same material on a timber framing. It was the spread of carpentry iu architecture that doubtless led to the adoption of exterior domes or shells of wood, and thus made possible the wide separation of the two shells already explained. In the process of time the inner shell, and often the entire "vaulting" (so called) of a church or public building came to be executed, in the majority of cases, in timber and plaster instead of masonry. This cheap and showy style of construction spread through Europe, and though it never quite drove out true vaulting, it prepared the way for the iron-frame construction of a later day. It was the experience gained in the heavy carpentry of big roofs and of the trusses required for plaster ceilings, vaults or domes of large span that made possible the use of metal trusses when iron became cheap enough and its manipulation sufficiently advanced to permit of such applications. One of the earliest and largest of metal domes was that of the Cathedral of St. Isaac's, at St. Petersburg (1818–1858), in which the framework is composed of sections of cast iron. But the use of iron for domes has in Europe been mainly confined to museums and exhibition buildings, while those for monumental public buildings of other kinds have, for the most part, continued to be built of masonry.

IV.

The United States inherited the structural and artistic traditions of Great Britain, where lath and plaster were even more abused than on the continent. The forests of oak and pine of the new world, and the lack of roads and facilities for transporting or handling stone, naturally resulted in carrying to further extremes the substitution of wood for masonry and brick. Until the colonies became independent there was little opportunity for public secular architecture; but the closing decade of the last century witnessed the erection of one monument and the beginning of another, which were destined to exercise a remarkable influence on our public architecture. These were the Massachusetts Statehouse by Bulfinch and the National Capitol, in which Bulfinch had at least a share. In both of these edifices an exterior dome was intended to form the chief crowning feature, and the one in Boston was executed in wood at an early date. It was (and still remains in its original form) a perfectly smooth and somewhat lofty cupola with a lantern, but wholly unrelated to the interior plan of the structure it crowned. That at Washington was perhaps intended to be of stone; it was comparatively low and covered the circular rotunda which has always formed the graud vestibule of the Capitol. With the extension of the Capitol by the north and south wings a more monumental central feature became necessary externally, and the present magnificent dome was erected. It is, in spite of its counterfeiting of marble by a sham architecture of cast iron, a very imposing and successful creation, so far as its design and proportions are concerned; but one cannot help regretting the necessity, whether structural or economic, of so poor a material for the carrying out of so noble a design.

Ever since the inception of these two legislative palaces a dome seems to have been considered an indispensable feature of any and every statehouse; and city halls and courthouses, customhouses and town halls have been erected by the score and hundred, adorned with cupolas and domes of varying degrees of excellence in design. The majority, indeed almost all, have been built of wood or iron. A true masonry dome has apparently been beyond the abilities of our architects or the purses of the cities or States which have employed them, or both. Wood, lath and plaster are perishable, easily become shabby, are subject to decay and in constant danger from fire; but they are cheap and light, and can be built on almost any plan or foundation with the help of posts and trusses. They look for a time as well as stone; the silhouette is just as effective; hence the vast number of these cheap but attractive shams. There are a few exceptions. The domes over the rotundas of the customhouses at New York and Boston are true vaults of granite, designed wholly for interior effect. The great dome of the Low Library is a genuine vault of brick masonry, of the most solid and ingenious construction. The Connecticut Capitol at Hartford has a lofty dome of white marble, gilded, as its chief exterior adornmeut, having no relation whatever to the exigencies of the plan. There are other examples here and there of true masonry domes, but they are few and far between.

Since iron has become so cheap iu the United States it has begun to drive out wood in framed structures of any importance. Comparatively few large domes have been erected of late years otherwise than with an iron framework, finished internally with wire lathing and plaster. This is reasonably fireproof and more durable than any wooden construction, but it is at best a counterfeit; and, though such counterfeits always have been and always will be inevitable features of the history of architectural development, one cannot help regretting that they should so frequently take the place of the nobler, if more expensive, masonry. For such lofty and tower-like decorative cupolas as that on St. Luke's Hospital the use of metal is more tolerable. What is really to be hoped for as the next stage of evolution is, however, the development of some combination of metal framework with fillings of terra cotta, brick or stone, which shall in its style of design more frankly accord with the character of the materials than any mere imitation of stone. The dome of St. Augustin, Paris, is constructed of such a combination, and is fairly successful. It is precisely the same principle which Mr. Haight adopted with such happy results in the iron and terra cotta ceiling of the present library of the University. There are great artistic possibilities as yet undeveloped in such a combination.

V.

Among recent domes that of the Low Library* of Columbia College is not only one of the most important, but one of the most interesting, alike for its size, its design and its construction. While it does not rank in dimensions with such colossal domes as those of the Cathedral of Florence, of the Pantheon, of St. Peter's at Rome, or even of St. Paul's at London and Hagia Sophia at Constantinople — all of which exceed one hundred feet in internal diameter — it has the distinction of being the largest masonry dome iu America; and its diameter of eighty feet places it high among the world's domes of the second class — namely, those over fifty to one hundred feet in diameter. It marks a stage and a phase of dome-design, both curious and interesting. From the point of view of construction it reveals a distinct advance in the direction of sound and solid building. It illustrates the very siugular and sudden popularity of the low-crowned dome as an external feature. In a considerable number of recent buildings the effort has been

*I desire to express my acknowledgments to Mr. E. A. Darling, Superintendent of Buildings and Grounds of Columbia University, for valuable information concerning this dome.

made to secure architectural effectiveness externally with a dome of low curvature fitted to the interior requirements. The beginning of this sudden popularity of an architectural idea which is as yet far from complete or quite satisfactory development can be traced to the Columbian Exposition of 1893. There it appeared in the works of two different architects; in the Art Palace of Mr. Atwood and the Agricultural Hall of McKim, Mead & White, besides a number of minor buildings. Its prototype is evidently the Roman Pantheon, whose vast hemispherical vault appears externally as a low dome rising but slightly above three encircling steps which serve to load the haunches against upward buckling. This dome, however, is almost invisible from the square in front. The modern examples are given a higher curvature and decorated with ribs, decorative scales or tiles, and crowned sometimes with a group of sculpture or a rich finial.

The dome of the library belongs in this class of domes with low curvature, and lacks, therefore, the majesty of a lofty cupola surmounted by a lantern. The obvious drawback to this treatment is its ineffectiveness at a near approach and its inapplicability to cruciform or complex buildings, whose projections inevitably hide from view any but a lofty dome, except to a spectator at a great distance. In buildings of moderate lateral extension or of moderate relative height the objection does not hold to the same degree. The new library is so proportioned, and the arms of the cross are so shallow, that the dome will come in view to the spectator at a comparatively short distance. The building is isolated and crowns a height, so that it is visible for miles around; and these conditions are all favorable to the best effect for a dome of this character. Its exterior treatment is so simple as to suggest that more thought was given to its effect as a feature in the silhouette of the group of buildings than to its decorative effect at a near view. Externally it dominates and gathers together the masses of the edifice, and by its swelling curve compensates for the somewhat severe simplicity of those masses. What it most lacks as a decorative feature — which indeed, as I have just said, it seems hardly to have been intended primarily to be — is the accent and interest of a lantern. But a lantern is a very difficult thing to treat, if not to construct, on so low curved a dome; and the lack, if it be a defect, this dome must share with all others of its class.

The criticism is also pertinent that this low dome is not, like that of the Pantheon or of Hagia Sophia, the external surface of the inner vault or ceiling, for the latter is a decorative shell formed on a metal skeleton and hung at a considerable distance below the external or true dome of brick. This being so, it is not altogether clear why the outer dome was not made more of, by giving it a more important drum, a steeper curve and a worthy lantern. Apparently the intention was deliberate to restrict its height for the sake of the general profile of the whole mass of the library; and while this intention may give rise to difference of opinion, it is to be observed that the isolation and elevated site of the library, the shortness of its wings, and the truncation of the corners of the podium of the dome into an octagonal plan, are all calculated to give the dome its maximum of external effect. The steps around its base are, on the other hand, too high, concealing the most effective portion of the profile. The convex surface of the dome is covered with colossal decorative tiles of Indiana stone, carved to form an imbricated pattern of laurel leaves. A central ornament will crown the whole.

Internally the cruciform reading room, lighted by four immense semi-circular windows in the octagonal podium of the dome, is covered by a decorative domical ceiling on pendentives. The whole ceiling, pendentives and dome alike, is of light construction on a steel framework, and entirely independent of the exterior vault. This exterior vault, the real dome, is of brick, twenty-one inches thick at the spring, diminishing to nine inches at the crown. The thrust is taken up by two belts of steel encircling the base; these are each twelve inches wide and one inch thick.

The construction of this enormous and ponderous vault of eighty-feet span presented to Norcross Brothers, the contractors, a problem which they solved apparently with the greatest ease, and certainly with consummate skill. The only real difficulty with a dome — the easiest of all vaults to build — lies in the centering. That employed in this instance was so light and flimsy as to appear at first sight utterly inadequate to its function. A series of ribs, ten feet long or thereabout, were cut from 2 by 8 inch spruce plank, set up twenty-four inches apart on the inner edge of the massive drum, and the upper ends framed or nailed into a circular belt made of inch boards, in segments eight or ten feet long, breaking joints and bolted through at frequent intervals. Upon this belt rested the feet of another series of ribs of two-inch stuff, similarly framed at the top into a smaller belt like the first. Above this were a third and fourth zone of ribs, made in the same way, the uppermost tier converging into a belt forming a tiny open lunette through which material was hoisted by a derrick supported from the floor of the reading room. This light framework of ribs, forming meridians of the hemisphere, their outer edges scribed to its curve, was covered with a sheathing of ⅞-inch spruce. That was all; there were no trusses, no elaborate and massive framework, no forest of timber built up from the floor to carry the enormous load. This flimsy wooden shell, framed as lightly as a cottage roof, was to do the whole work. That it successfully fulfilled its function seems paradoxical at first, but the explanation is perfectly simple. The lower and more massive parts of the vault, being nearly vertical, laid but a slight load on the centering. Higher up, the brickwork was laid up only a half brick in thickness at a time, until a complete zone of the dome three or four feet high was finished. While this was in progress its pressure per square foot on the centering was of course less than the direct weight of a square foot of brickwork four and one-half inches thick — and hence could never exceed thirty pounds, while it would approach that only in the upper part of the dome where the zones are small. But with the completion of each zone the latter becomes self-supporting, and as soon as it has "set," will itself carry safely the brickwork added to give the vault the necessary thickness. The real strength of the centering was in the belts, and the disruptive strain exerted on these by the loaded centerings above each was not only resisted by their own tensile strength but counteracted also by the weight of the completed masonry which enveloped them.

This whole system, by its very simplicity, was a real triumph of constructive ingenuity. It takes genius to find the simplest solution of a great problem, and Messrs. Norcross are certainly entitled to the highest credit for this illustration of the fact.

THE POSSIBILITIES OF AMERICAN ARCHITECTURE.*

BY PETER B. WIGHT.

"Watchman! tell us of the night,
What its signs of promise are,
Traveler! o'er you mountain height,
See that glory-beaming star.

"Watchman! does its beauteous ray
Aught of joy or hope foretell?
Traveler! yes, it brings the day,
Promised day of Israel."—*Old hymn.*

IN the first paper in this symposium I have left the second question, "Can Architecture Again Become a Living Art?" unanswered. I have only suggested a few of the possibilities of the future, measured by some modern tendencies that are evident to all. Beyond that the self-styled prophet becomes only a guesser. I have no words to waste on prophecy, for I am not as hopeful as some of you may be. But when a man sees a light it is his duty to tell others where it is, so that they may follow it.

The only question before us is, What is possible, and what is our duty in connection with possibilities as we find them? Are we to drift with every tide, or attempt to steer our craft *against* the tide? It is hard to decide which of these courses would be the most foolish. A wise mariner takes advantage of every tide, and steers his craft with its assistance. He is a man with a *settled purpose*. Like him the true architect takes advantage of the possibilities of the moment and performs his best duty when he has a *settled purpose* in whatever he does.

Some of us have tried to do the impossible. We have attempted to find in the style of architecture of one period which we know to have been a living art, enough of its vital principles to apply to our own work. We have failed in producing the same results which that period did, because there are so many other vital principles of our own time that must enter into a rational and consistent modern architecture. Such was the attempt in England and America to revive an architecture based on that of the twelfth and thirteenth centuries, and of Richardson to do the same with Byzantine and Romanesque models. Of these, the latter effort was the better of the two. The principles embodied in these styles are eternal and are bound to express themselves in all good architecture, notwithstanding that critics called the styles themselves barbarous. But there are others which the march of civilization will compel us to recognize, and the results will be different from anything that has yet been seen, if they are recognized.

At the present time an attempt to revive in America the styles of the fifteenth and sixteenth centuries of France is on trial. These are two styles. One succeeded and grew out of the other. Some architects now practice in one, others in both. The fifteenth century château style of France was a transitional style, marking the change from late Gothic to early Renaissance, and is best known among the architects as "Francis I." That of the sixteenth was the perfected French Renaissance of Louis XIV. I say perfected, for it was a complete style, based on the Roman, when Colbert established the French Academy of Fine Arts. The Francis I. style can lead to no other, and if there is any truth in evolution it is waste of time to practice it, however beautiful and poetic it may be. The modern buildings attempting to follow it are purely imitative. Those of the Renaissance are capable of much greater diversity and development. The great crime of the French Renaissance has been its perpetuating the decorating of walls with a system of pilasters and cornices which have no relation to the construction of buildings. They do not distinguish the stories of a building half as well as its windows. This system was first used in Italy, notably in Venice, and was derived from the exterior of the Flavian Amphitheater of Rome, where it had some constructive purpose. The Italians decorated its details with such consummate art that the French could not resist its influence. But in all times it has been the most illogical of all architectural decorations. As long as it is continued as a feature of the present attempt to revive the French Renaissance, it will demonstrate its weakness.

And yet a rational architecture as conceived by the Greeks and the builders of the latter part of the thirteenth century is impossible in the present condition of civilization. Modern civilization demands infinitely more of the modern architect than

*Closing Paper of the Symposium of 1896-97, read before the Illinois Chapter of the American Institute of Architects, June 14, 1897.

either of these could supply with all the knowledge and fidelity to true construction that they evinced.

If, then, it be accepted that architecture is not today a living art, such as was that of several well-known periods, and in accordance with the definition given on a previous occasion,* we can only reason from analogy how it may be at least an indigenous art, if not altogether possessed of the essential elements of vitality. The only analogy between our constructive methods and those of others that we have found is in the first and second centuries of the Christian era, when the Roman empire held sway over the whole of the then known civilized globe. The only difficulty in maintaining this with the conditions existing in America at the present time is that while American ideas dominate the Western continent there are not only other continents, but other contemporaneous civilizations with which ours is to a great extent allied. We must be first willing to believe that America has already advanced far enough to be a center of thought and circumstance. What is known as the *American idea* is general throughout the United States, and there is more homogeneity in American civilization than ever existed in the Roman empire. That is one advantage for us. Then, our country is larger and probably more populous than that was; and that is another advantage. The analogy is strongest in the essentially *practical* character of the people of both. In Rome it came from centralized autocratic power, but the same is with the people everywhere here.

If we can establish the analogy between two practical nations it is as far as we can go, except when we look at their works. We find that by applying our definition it will not fit the case of the Romans, for we have no reason to believe that its architecture was "upheld by popular appreciation," as was the art of Greece. For that reason we have no hope to see a living architecture in our country for a long time to come. But in many respects we may find that the conditions which are now making our architecture similar to that of the Romans may by fidelity to the true principles of economic building develop an architecture which will have as many elements of vitality as those of periods which succeeded the Roman era. Therefore, instead of beginning with thirteenth century Gothic or seventh century Byzantine, may we not better begin with second century Roman? I do not mean to begin as the Renaissance architects of the sixteenth century did. They saw only the surface of Roman art. We know ten times as much as they did about it, and we can become versed in the elementary principles of all antecedent and successive periods in which we know that architecture was a living art if we will only study them diligently and profitably. With such guidance, why should we not progress?

It is hardly necessary for me to trace the analogy between the art of building among the Romans and that of America at the present time. What the first was is set forth to the utmost possible extent in the great work of Auguste Choisy,† called "*L'Art de batir chez les Romans.*" We are all supposed to know what the latter is. It will be seen that we have already adopted nearly all of the methods of the Romans, and only in exceptional cases those of other nations. They are the vernacular processes of our time. But we have already added to them many others that are progressive, and some that are entirely original. The sticklers for literal truth in expressing the structure of a building everywhere through its architectural dispositions are constantly running against methods of building which are a necessity to us because they satisfy our practical needs. For instance, it has been found impossible to express the material and structure of the exterior of a building on the interior, except in church building, wherein we have to copy the methods of the Gothic architects. Modern convenience and comfort demand that we shall have at least two materials in every external wall, one for the exterior and one for the interior. We are generally obliged to have three, one for the exterior, one for the center, or heart of the wall, and one for the interior. It is in the last case that we find the analogy to be most strong between the Romans and ourselves. Our buildings must be lined, like a lady's dress. The simplest of them are plastered, on something that keeps the plaster away from the wall, so that the house will be warm in winter, cool in summer, and dry always. We can line it also with wooden boards, if we will, and accomplish the same result, and we can vary the material of the interior, running up the gamut of expense until our client's pocket is depleted; even line it with silver as Justinian did his Aya Sophia. But we cannot escape the process, except in church building, and in the latter we do it to the detriment of comfort, which our mediæval ancestors either had to dispense with or sacrificed in the name of their religion. It is as important in a statehouse as an artisan's dwelling.

In ordinary buildings we are not disposed to veneer the exterior of our walls with cement, marble slabs, or mosaic, as the Romans did, but either face them with a superior brick or stone in blocks. The Roman sometimes faced them with stone, but oftener with thin slabs of marble, to which his climate was gentle, or with mosaic of the same material. We also have command of these and many more materials. We can even make our mosaic with tesseræ of clay or glass, which will endure in any climate. His brick buildings were always thus veneered or coated with cement, because his bricks were rough and thin, used more as subsidiary to his mortar than dominating the structure. Our bricks, even our common ones, are better than his, and we can make a respectable looking wall with them, while we have also the superior face bricks that he did not have. But both of us use the common brick for our main structure. Our system of building for all ordinary purposes is based upon common bricks. And here is the strongest analogy between our own and Roman times. I take no note here of frame building in wood. The vernacular system is essentially American. It has already developed an American style of frame architecture, with many variations, and has great vitality. Of course there must be excepted from it all attempts at imitation, such as the representation of half-timbered construction, which is not practicable in this climate, with boards and plaster, and the building up of columns and cornices, and other details peculiar to stone architecture, in wood. There can be no living art in imitation, or any art at all.

The fault of Roman architecture was that when it sought for more expression than plain walls could give it used the architectural forms of the Greeks as decorative, and not always as architectural features. This was not universal, for in its peristyles and their superimposed cornices, it followed the Greek method of building, and the Romans adapted the arch of the Assyrians to their constructive arcades. They evolved from the latter barrel vaults, ground arches and domes, to which their brick and concrete were especially adapted. All these are now vernacular with us.

From this it will be seen that, while recognizing the analogy between Roman methods of building and those common with us, there is no reason why, in practice, we should not act with discrimination and avoid the illogical practices that the Renaissance architects copied without due consideration.

These are but suggestions that might be enlarged upon to any extent. But it is in those building processes in which we have advanced far ahead of the Romans that there is the greatest field for the development of an architecture that will be a better expression of our own civilization than anything that we can copy. In this we cannot deny the influence of the past in many details, but there will be a greater field for originality in case we do not find any past experience to guide us. The high-building question and the proper treatment of the new materials and systems of construction that have come into use are sure to rise up before us at this stage of the question with a large interrogation mark. I do not propose to discuss the æsthetics of these buildings as a whole, nor to deny the possibility of fulfilling the desire for beauty in any class of buildings. It is only so far as new materials and constructions are used that a field is opened for investigation and study, such as has never before been encountered. The necessity for making such buildings fireproof involves a covering-up process that forces us to conceal constructive features which could not be beautified by any art. These are engineering problems, and there is no beauty in engineering works but the beauty of fitness and such as they exhibit by asserting their strength. Once covered, it is a hopeless task to restore even this, and the greater effort the artist makes to do it the worse is the result. The structure once covered with fireproof material, it is like a Roman brick wall. This could be covered as the Roman did or as we can with materials and methods in which we have improved upon those of the Romans. Therefore, whatever of art such buildings may display will naturally be developed by the use of such methods, not by historical architectural forms. In this the element of judicious color may predominate. It has already been developed that a treatment of such buildings nearest in accordance with the lines of the steel construction has best solved the problem of proportion. Compare any such building in which there are no more vertical lines than those of the main steel supporting members, with one in which intermediate piers around subsidiary steel vertical members are used, and you will see that the advantage is with the former. In the first case you will have windows much broader than they are high, subdivided by mullions, and the maximum of light. In the last there will be an unnecessary multiplicity of vertical lines. It is the horizontal *masses* of the windows that counteract the vertical *lines* of the piers better than any number of horizontal *lines*. Hence the design of high buildings may best be developed from their own conditions.

The use of steel has revived post-and-lintel construction under new conditions that cannot be gainsaid. The level floor constructions have forced us to accept level ceilings. To a man who knows anything of building nowadays, the false ceiling of any design or material is a complete give-away for the architect. The necessity for constructive flat ceilings opens a legitimate field for the painter; and as painting is today a living art, the architect finds in the painter his most valued assistant. The erection of fireproof public buildings has opened an enlarged field for the painter or decorator of any kind, while marble and mosaic are the architect's legitimate handmaids in the treatment of wall surfaces. These arts he now finds to be full of vitality and energy. The dignity of a wall *as* a wall has been too long denied by the modern architect. It is just as bad to build up a system of decoation to conceal a wall, whether interior or exterior, as to give a construction in steel the similitude of a wall.

I have suggested only a few of the possibilities opened to us through an investigation of the field of historical research, which has been made accessible by the publications of many eminent scholars. Recognizing that we cannot close the book of history and evolve an architecture from the depths of our inner consciousness, I have traced some of the analogies between the condition of the building art in our own country as we find it and that of a past era which it most resembles; and though judged by the best criterions Roman architecture was not a living art in the

* Definition in first paper: "A living architecture is the *evolution of building* in a way that reflects the progressive life of a nation in science and art, when upheld by popular appreciation."

† Translated by Arthur J. Dillon, and published in *Brickbuilder*, 1896.

strictest sense of the word, it was yet possessed of elements of greatness that we cannot deny. It was not always true to its constructions, and did not rise to any degree of excellence in sculptured forms. It was entirely destitute of imagination, which is natural to people of such a practical turn of mind. We as a people possess this faculty in a slight degree, but it needs discipline and development. We misapply it constantly, and the want of this discipline is seen in the designs of many of our younger architects who have mistaken picturesqueness for art. On the other hand, another class are tied down to rules which they have learned in modern schools, which stifle all imagination. It remains, therefore, to find how logical architectural thought can be crystallized so as to find logical expression.

I have assumed that in the present state of society we have no right to become iconoclasts. However we may criticise bad tendencies, we have nothing to break down. We are here and we must make the best of the situation. We are now by the laws of the State of Illinois a recognized profession, and I hope it will soon be the case also in other States. We are an integral part of a national institute which has gained dignity with age, whose object it is to "unite in fellowship the architects of this continent." We are organized into local *Chapters* for local work. The great question is, How may we best attain the results contemplated in the constitution of the Institute? This subject was broached in two admirable papers read before the annual convention in St. Louis, in 1895. These papers were referred to a special committee whose report received no attention whatever. But another committee was appointed to again propose amendments to the constitution and by-laws with instructions to embody such so-called "reforms" as were suggested in the course of another discussion. The committee has the matter in charge with every prospect that the next convention will again be turned into a debating society as it has been for the last thirty-five years. But they cannot undo the work of its fathers. There is a higher law of custom and precedents in all organizations of long standing.

These fathers, in their wisdom, which we can now understand after many years, constructed an ideal framework; but it has never been filled out to completeness. Something more is wanting to fill the void. As if by inspiration, they used one word in its organization which is the keynote to all that it should be, the sacred word "Fellowship," which is as old as the laws delivered to Moses on the mount — a word which has bound together the chosen people of God, who, though scattered, are a unit even to this day in all that concerns the heart and the family. In "Fellowship" we find the watchword of the Freemasons and the guilds, when Freemasonry was a reality and the guilds were the conservators of educated labor.

But true fellowship must proceed from the bottom and not the top of the fabric. The want of fellowship among architects is due to the opposing power of individuality. It is individuality that covers the land with architectural freaks. There have been exceptions to this, and it is equally true that individuality has often risen above schools and academies and asserted itself in such a way as to excite the admiration of the whole community. But individuals die, and whom the gods love die early, leaving no successors. Their influence soon disappears. No matter what these may have done by example and precept, the freaks are always in the majority.

The Institute was wise in organizing local Chapters, but the Chapters are made up of individuals, saints and sinners all gathered together and keeping the peace only by the operation of law. There is no fellowship in the Chapters except such as may be found in the cliques into which they are often divided. The recital would be of too personal a nature if I should venture to describe some of these cliques. The fact remains, however, that instead of exerting the beneficent influences of fellowship, they are always baneful. The most injurious of these cliques is that of the aristocrats of the profession, who are "sufficient unto themselves," and too high and mighty in their own estimation to associate with the common herd. This exalted position has been obtained through their good fortune in obtaining large patronage and designing large buildings. They are the stay-at-homes when the Chapters meet, but at the conventions they advocate turning over the government of the Institute to an exclusive body composed of themselves. Then there are the young-artist cliques, who think that every man over fifty is an old fogy. Besides these, there are the cliques who assume to be the prophets and mouthpieces of certain schools of art.

Our organization is imperfect because it begins with the Chapter. The Chapter in original Freemasonry was the higher organization of the lodges. Freemasonry originally dealt with building matters. It was only obliged through necessity, growing out of the jealousy and greed of autocrats, to adopt signs, grips, passwords and secret organization which naturally led to the practice of formal rites. This is unnecessary in the present state of society. The guilds were the conservators of other trades and arts sometimes related to building and sometimes not. But the objects of both were mainly the same. Our organization, therefore, lacks completeness for want of organized guilds. I know that the suggestion to bury the individuality of the artist in a guild is an unpopular one, and therefore I have approached it gradually. But I am not alone in this suggestion. Russell Sturgis, of New York, one of the oldest members of the Institute, in the concluding pages of his "Studies of European Architecture," says: "In the world that we know best, healthy life has never been separated from growth, and what we now call *evolution*. Painting can be seen going on through regular evolutionary changes from school to school, from mood to mood, from fashion to fashion; and painting is now alive, a living and struggling art. Architecture is not exactly alive; what is doing in architecture cannot be compared, as to its fine-art side, with what the painters are doing, or the sculptors, or those who are working in artistic pottery; or those who are making windows of stained or painted glass. So far as we know, it will only be when the architectural designer stops copying consciously this or that style of past times that he will produce anything worth having. In other words, it is only when each designer *feels free no longer* and begins to work under the influence of his neighbors and contemporaries, friendly rivalry and eager jealousy alike spurring each man to vie with and surpass his fellows, but always in the same line of work, as near as he can bring it out — *it is only then, when the artist is fettered, that art is free.*" I admit that it is difficult for many to accept this last proposition, but its truth must be admitted.

The art which was fostered in the Middle Ages by the guilds and lodges can just as well be fostered now. It will not be middle-age art. If rightly directed, it can only be such an art as I have suggested; and it will be such that some day it may lay claim to being a living art. Practically, architects may join together in groups and form guilds, associations or fraternities, for mutual counsel and support, or they may consolidate their business interests under corporation laws. Many ways will suggest themselves as to how this may be done. For instance, specialists in any line may join together, such as church architects.

This is not the time or place to suggest details of organization. It is the principle that concerns us; it is the best results that we are looking for. These several groups of architects can each have their own accepted principles, their own laws. There may be few or many members in each. But they will not die, like individuals, or become infirm with age. They will be self-perpetuating bodies, and their influence will be felt in the world of art in proportion to the confidence they inspire or the reputations they build for themselves. They must establish their reputations, as individuals do, by their works. They will contain both old and young, and their succession will be assured. They may dissolve at times, but the best of them will survive. They will naturally come together in the Chapters, which in turn are represented in the Institute. In smaller cities there may be only one group, or two rival groups; but each can seek representation in the Institute, and thus the Institute may become truly a national body representing vastly more of the profession than it now does — but, better still, representing the architectural thought and tendencies of the whole country.

Each group of architects should have its associated artists or decorators in every line that represents the adornment of buildings. For thus only can the arts rise together to greater excellency. Students and draftsmen will be attached to them, in a grade of membership similar to that of apprentices, with opportunities of promotion within the guild or transference from one to another.

The signs are in the air that America is more likely to be the home of independent architectural thought — in fact of every kind of fine art — than any other country, and it is in accordance with the progressive spirit of the Middle West that Chicago should lead in such a movement. But it must be disciplined thought and submissive to the lessons of history if it is to lead to progress in the right direction. Too much freedom in design is no less dangerous than the slavish copying of architectural precedents. The safe course lies between them, and the controlling influences will come from the best use we can make of the building materials that we have and the methods of construction developed by modern science.

Such an architecture will be a natural evolution from the art of building as practiced at the present day, and in all the periods when building was a progressive art.

This will not only be rational architecture, but, if rightly directed, it will be beautiful architecture. For no architect, or any other artist, is true to his vocation unless he can ultimately evolve beauty from everything within his reach.

Then there will be hope that art will grow not for art's sake, but for humanity's sake. The artists will be the educators of the people, and the people will rise up and call them blessed. Then only will it be upheld by popular appreciation, and if this time ever comes, architecture will again become a living art.

FOREIGN COMMENT UPON CHICAGO POST OFFICE DESIGN.

THE design for the new Chicago Post Office by Mr. Henry Ives Cobb seems to be attracting European attention, as well as much favorable comment in our own country.

The *Construction Moderne*, the leading architectural journal of France, in its issue of May 29, devoted two full-page illustrations to it with a long and most flattering description.

It tells of the appropriation, the difficult conditions presented by the lot, its surroundings, etc., then goes on to say that "All the public buildings are under the control of the Secretary of the Treasury, who, besides directing the finances of the country, exercises the same authority as does our Minister of Public Works. One division of his office is under the Supervising Architect of the Treasury Department, who designs all of the post offices, hospitals, customhouses, etc. For some reason or other the public buildings that have been thus designed are rarely—as you know—

models that the American architects care to follow in their private work.

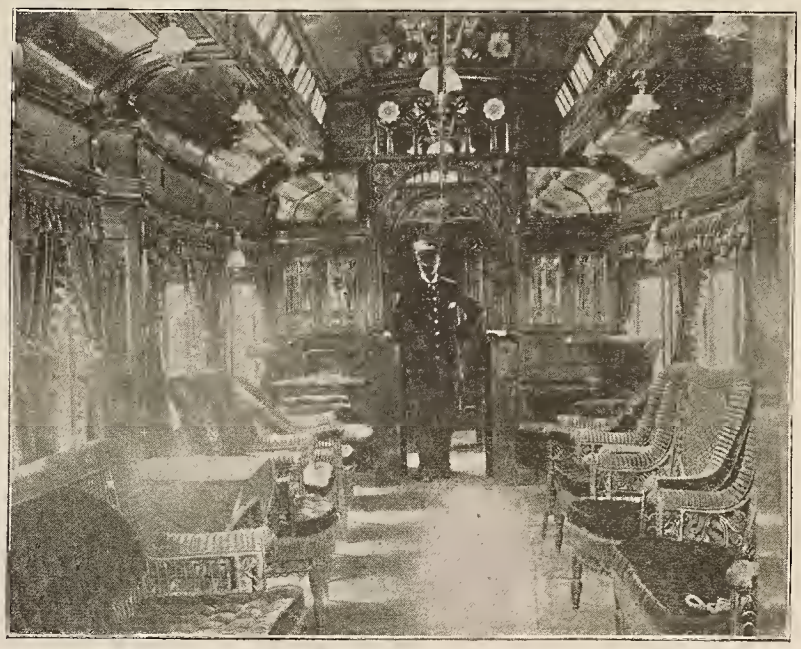
"When it was decided to erect a new post office in Chicago (upon the site of the old one now being torn down, because it was too small and was too badly built, although only erected in 1871), its citizens had enough influence upon the Federal Government to induce Congress to commission a man of known reputation to design what would be a monumental structure and one that would be in keeping with the growth and prominence that city had attained. It is the first time in the history of the country that such an exception was made in the regular routine of affairs.

"Mr. Henry Ives Cobb was chosen, a young man, but one who has already established a national reputation, who is perhaps best known to us Frenchmen by his masterly and most original treatment of the Fisheries building at the World's Fair; the building we think that attracted the attention of Europeans more than any other one structure in that splendid architectural exhibition."

It must be very gratifying to Chicago to know that the world's severest art critics—the French—think so well of its building and of one of its most prominent citizens.

A GREAT RAILWAY BRIDGE.

THAT the rapid march of events, advances in science and the mechanical arts, is so great as to cause to pass unnoticed feats in engineering that forty years ago caused comment throughout the world, has been nowhere better illustrated than in the recent completion of the Grand Trunk Railway bridge at Niagara Falls. The suspension bridge which was erected in 1855 has stood as one of the seven wonders of the modern world. It



INTERIOR, OBSERVATION CAR, SEASIDE SPECIAL.

has been removed, and the immense gorge is now spanned by a single arch steel bridge of six times its capacity, and this work, done without a day's interruption of traffic, is one of the most remarkable engineering achievements of modern times.

The new bridge is a single steel arch of 550 feet in length, supplemented by a trussed span, at either end, of 115 feet in length. This, with the approaches, makes the total length of the bridge slightly over 1,100 feet. The railway tracks surmounting the bridge are 252 feet above the water. The bridge has two decks or floors. On the upper floor there are two tracks for railway purposes exclusively, while the lower floor contains a wide central carriageway, double electric railway tracks, and on either side passageway for pedestrians.

As an evidence of the enormous strength of this beautiful structure, the arch is designed to carry on each railway track a load of two locomotives with four pairs of drivers each and 40,000 pounds on each pair, followed by a train of 3,500 pounds per running foot, and is designed to carry in addition a live load of 3,000 pounds per running foot on the lower floor.

The engineering journals have published interesting data regarding this structure, that of the manner in which the immense steel cables were cut and hauled away with engines, being most interesting, but it was a daring mind that first suggested a span that in effect would reverse the supporting members, and make them sustaining trusses instead of bearing cables.

This gigantic improvement is in a line with the general disposition of the management of the Grand Trunk System to give to the public every facility to travel in comfort and with the greatest speed from the West to its terminals at Portland, Maine, and New York and Philadelphia. Notable among these is its through train to New York that encompasses the distance in twenty-five hours, passing over the most picturesque route through New York and Pennsylvania, the Lehigh Valley, and almost the entire distance by daylight.

As a sample of the remarkable running time upon the New York and Philadelphia connection of the Grand Trunk—the Lehigh Valley road—Rollin H. Wilbur, general superintendent, has furnished the following record taken from the P. & N. Y. division train sheet of April 21 last, which is certified to by O. O. Esser, superintendent of the division. The record was made by the Black Diamond Special of the Lehigh Valley road, train number 9, going west, and is as follows:

North Branch.—Engineer, A. E. Mason. Engine No. 665.

Station.	Time of passing station. Copied from train sheet.	Time between stations. Minutes.	Distance between stations. Miles.	Rate of speed. Miles per hour.
	P.M.			
Falling Spring....	5:36 (52 m. late)	17	19.72	69.6
Tunkhannock	5:53	16	18.09	67.8
Laceyville	Arr. 6:09			
	Lv. 6:13	31	29.54	57.2
Towanda	6:44	15	16.38	65.5
Sayre.....	Arr. 6:59 (36 m. late)			

Seneca.—Engineer, W. Owens. Engine No. 668.

Sayre.....	Lv. 7:05 (38 m. late)	29	27.14	56.2
Alpine	7:34	33	43.96	79.9
Geneva Junction..	8:07	4	2.37	35.5
Geneva	Arr 8:11			
	Lv. 8:15	17	15.22	53.7
Manchester	8:32 (19 m. late)			

SUMMARY.

North Branch.

Falling Spring, not including stop at Laceyville.	P.M. 5:36 (52 m. late)	79	83.73	63.6
Sayre.....	Arr. 6:59 (36 m. late.)			

Seneca.

Sayre, not including stop at Geneva.....	Lv. 7:05 (38 m. late)	83	88.69	64.1
Manchester.....	8:32 (19 m. late)			

Schedule Running Time.

Allowing 4 minutes each for stops at Lacyville and Geneva:

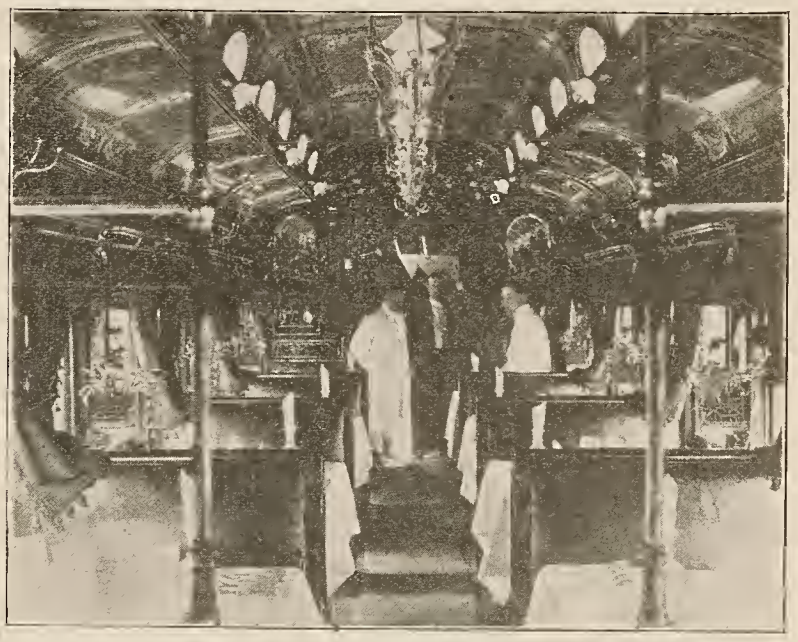
North Brauch..... 52.9 miles per hour.
Seneca ..... 52.2 miles per hour.

I certify that the above is a true copy of the record on the train sheet on file in the trainmaster's office, P. & N. Y. division, Sayre, Pa.

O. O. ESSER, Superintendent.

The above record is a remarkable one—especially the run from Sayre to Alpine, when 43.96 miles were made in 33 minutes, or at the rate of 79.9 miles an hour. This compares very closely with the fastest spurt on the famous Lake Shore run of October, 1895, when 33 miles were made at the rate of 80.6 miles an hour, and 42 miles at the rate of 79.04 miles an hour. The Black Diamond has certainly earned its place among the fastest running trains in the world.

That this magnificently appointed and extremely fast route to the Eastern cities may not excite comparisons by the traveler to



INTERIOR, BUFFET CAR, SEASIDE SPECIAL.

the seaside and mountains of the New England States, the "Seaside and White Mountain Special" has been placed in operation for the summer months. Every Thursday is seen running eastward from Chicago a train composed entirely of the most luxurious Pullmans that have ever been turned out of those noted car-

shops. The buffet and dining cars are like palace dining rooms in appointment. The observation car at the rear of the train departs widely from the straight unbroken line presented by ordinary railway carriages, its sides being a succession of bays, which add greatly to the apparent width, and give the observer a much more extended view from the windows. In fact, the "Seaside and White Mountain Special" is a complete train as far as modern ingennity and furnishing art can make it. As the Maine coast and the White Mountains are synonyms for coolness, health and rest, this great special is "sold out" each week long before the day of starting. It is of such a progressive spirit, which looks to supplying the luxuries as well as the necessities of travel, that marks the really popular railway of the present day, and with the close competition presented on every hand it is an evidence of the highest managing ability where such advantages are presented to the traveler as are found on the Grand Trunk System.

THE STEWARDSON MEMORIAL SCHOLARSHIP.

THE Stewardson Memorial Scholarship, in competition in 1897 for the first time, was awarded to Louis Herman Duhring, Jr., equal honorable mention being given to Oscar Mons Hokanson and Charles Z. Klauder. All three are Philadelphia draftsmen, Duhring having been a student for four years and Hokanson for two years in the Architectural Department of the University of Pennsylvania, both having been in Philadelphia offices since leaving college in 1895. Mr. Klauder has received all his training in Philadelphia offices. Ten designs were placed in competition.

The judges of award were Prof. William R. Ware, of Columbia University; John Galen Howard, of Howard & Caldwell, architects, New York, and George L. Heins, of Heins & La Farge, architects, New York.

The subject of the competition was a "Protestant Episcopal Church in a City," and the following conditions were observed as a programme:

The lot is rectangular. Its west side is 175 feet long and faces a public square. Its north side is 250 long and faces an important street. To the east is an important street and to the south a party line.

The main axis of the church runs east and west.

The interior is to be not less than sixty feet nor more than eighty feet wide in the clear, including a nave and side aisles. There are to be transepts with or without side aisles, and the north transept is to have an entrance porch, but the main entrance will be from the west front. The chancel is to be arranged for a vested choir. There must be an organ space in or near the chancel, and the position of pulpit and lectern must be shown. A baptismal chapel must be placed near the western end of the church. To the south of the church must be the choir room and vestry, opening on the same hallway. Cloisters connect the church to the parish house (area 3,500 to 4,500 square feet), one wall of which is to be built upon the party line. The house shall be shown in plan only in outline, but will appear on the front elevation as a part of the general composition.

The materials are brick or stone, or both; color effects by means of mosaics or majolicas are permitted.

The design is to be freely treated in any of the Renaissance styles of the sixteenth, seventeenth or eighteenth centuries.

The preliminary drawings are a plan, a front elevation and a longitudinal section, at a scale of $\frac{1}{16}$ inch per foot, all in pencil. The final drawings must embody the fundamental conceptions of the preliminary study. They are to be at a scale of $\frac{1}{8}$ inch per foot and consist of:

A. A plan of the church and its surroundings.
B. An elevation of the west front of the church and parish house.
C. An elevation of the north side.
E. A longitudinal section looking south.

The elevation of the west front is to be rendered in washes of ink or color, or both.

The other drawings are to be in ink in pure line, and the plan is to have its solids blacked in.

Each drawing is to be on a sheet of paper 24 by 36 inches, mounted, with margin of tinted paper, on a stretcher 34 by 46 inches.

PENNSYLVANIA CAPITOL COMPETITION.

ON June 15, the commissioners for the new capitol building for the State of Pennsylvania took action regarding certain matters not mentioned in the programme printed last month, and issued a circular containing the additional information, which was in conformity with Paragraph 37, Part II, of the programme. The circular is as follows:

BOARD OF EXPERTS.

The commissioners have made the following appointments to the Board of Experts in due accordance with the provisions of the programme, to wit: Mr. John M. Carrere, of New York, the nominee of the six especially invited architects, and Mr. Walter Cook, of New York, the nominee of Mr. Carrere and of Prof. Warren P. Laird, the adviser of the commissioners; these three constituting the Board of Experts.

REQUEST FOR CHANGE IN PROGRAMME.

At a meeting of the commissioners held June 15, a request was presented, with favorable recommendation from the adviser, asking for a reduction in the number of drawings required by the programme. After due consideration it was decided that the change suggested should not be made, the programme to stand as originally issued.

REQUESTS FOR INFORMATION.

The following explanatory notes are issued in response to inquiries:

a. It is believed that the sum specified as the limit of cost for the legislative building is sufficient for its erection in the manner, and to at least the minimum capacity, required by the programme. The provisions limiting the cost and specifying the areas required are therefore mandatory and will be strictly and fully observed in judging the designs. The statement in Paragraph 1, Part IV, advising competitors to not allow the total volume of the building to exceed 1,700,000 cubic feet, is merely advisory and is offered as a suggestion.

b. The requirement that drawings must be rendered in monotone without the admixture of other color (as set forth in Paragraph 4, Part V) means that a single color only, unmixed with any other, is to be used. This does not pertain to the rendering of the solids (walls, supports, etc.) of plans or of the sections, which may be, if desired, shown in black, but which if not rendered in black must be shown in the same color as that used for rendering the drawings. Neither does it pertain to the lettering, for which any color may be used.

c. Shadows must be rendered with the brush.

d. No drawing required to be done in line may be in pencil.

e. The plan and elevation at a scale of 64 feet to the inch, specified in Paragraph 1, of Part V, may be placed either upon a single sheet or upon separate sheets, as desired.

f. The indication of any treatment of grounds or approaches cannot be permitted in any other than these 64th-inch scale drawings.

g. The requirements in Paragraphs 2 and 3, of Part IV, that there should be an aisle upon at least one side of each seat will not be met by the placing of an aisle at the rear of the seats.

h. The terms "principal floor"—Paragraph 7, and "first floor"—Paragraph 12 (*k*), both of Part IV, are equivalent.

i. Neither trees, foliage nor their shadows are permitted to be shown in any of the drawings.

j. Through a typographical error in Paragraph 9, Part IV, the letter "*b*" is omitted from the seventh line between the words "having" and "in." This portion of the paragraph should read as follows: "*a*, *b*, *c* and *d* are to be arranged en suite connecting with public corridor and having *b* in direct communication with *a*, *c* and *d*."

k. The material of which the outer walls of Building No. 4, as shown in Part VII of the programme, are constructed is white limestone.

l. The requirement in Paragraph 10, Part III. that the line of frontage of the present buildings should be approximately maintained in the new arrangement is reiterated.

m. The State Library is provided for in the existing Executive Building as indicated in Paragraph 4, of Part III.

n. The term "American Architects," Paragraph 1, Part I, indicates all architects engaged in the practice of architecture in America.

o. There will be no extension of the limit of time set for final delivery of drawings, namely, July 24, 1897, at 12 M.

p. All further and necessary information asked for will be found, it is believed, upon a more careful perusal and consideration of the programme.

OUR ILLUSTRATIONS.

First Baptist Church, Ottawa, Kansas. G. P. Washburn, architect.

Park Stables, Belle Island, Detroit, Michigan. Mason & Rice, architects.

First Avenue Presbyterian Church, Denver, Colorado. William Cowe, architect.

Residence of W. McDonald, Argyle Park, Chicago. W. M. Walter, architect.

Mausoleum, Forest Home Cemetery, Milwaukee, Wisconsin. Charles A. Fink, architect.

A Grain Silo at Greenwich, England. Aston Webb, architect. From *The Builder*, London.

Design for an Institute of Architects. By Percy E. Newton. From *The Builder*, London.

Views of Columbia University Library, New York. McKim, Mead & White, architects. In illustration of article on "Domes," by Prof. A. D. F. Hamlin.

Synagogue Bnai Brith, Los Angeles, California. A. M. Edelman, architect. Exterior and interior views are shown. It is built of brick, faced with rockfaced brown stone, colored pressed brick, with Arizona sandstone trimmings. It is 64 feet front by 106 feet deep, and from sidewalk to top of star is 94 feet in height. The basement contains lecture room, classrooms, library, trustees' room and lavatory, and with ceiling 12 feet in clear. The main floor contains the Auditorium, 60 by 82 feet, with height of ceiling in the center of 40 feet. Also main lobby with gallery over same. The basement is finished with Oregon yellow pine, and auditorium and lobby finished with Oregon pine and oak. The entire cost of building was $42,000.

Photogravure Plate: A Chicago Residence. Frank L. Wright, architect.

PHOTOGRAVURE PLATES.

Issued only with the Photogravure Edition.

Residence for L. A. Carton, Chicago. W. A. Otis, architect.
Residence of Mrs. McLaury, Chicago. H. Shaw, architect.
House on Washington avenue, Chicago. H. Shaw, architect.
House on Washington avenue, Chicago. H. Shaw, architect.
Residence of John J. Mitchell, Chicago. Beers, Clay & Dutton, architects.

Hull Memorial Chapel, for First Unitarian Society, Chicago. W. A. Otis, architect.

Otto Store Building, Buffalo, New York. E. A. Keut, architect. The building will be constructed for heavy warehouse loads, of steel beams and columns, and fire-clay floor arches, in the most approved modern methods, and will be 100 feet front by 125 feet deep, and 85 feet high. It will have 42,000 feet of floor surface. The cost will be about $70,000, and all contracts have been let except for the terra cotta, to Buffalo bidders. The design is in modern French, and the structure will be built of white marble to the second story, and thence to roof of cream white terra cotta for both ornament and plain wall surface—the first building of the kind in Buffalo in this respect. It will be complete in September, and is the first of the large buildings projected for the year that has been let.

NEW PUBLICATIONS.

HOT WATER MANUAL, with Information and Suggestions on the Best Methods of Heating Public, Private and Horticultural Buildings. By Walter Jones. Illustrated. 220 pages. Chicago: The American Artisan Press.

This is a handy little volume, which deals with the practical problems of the high and low pressure systems, bath apparatus, hot-water supply for public institutions, duplicate boilers, radiators, laundry drying stoves, swimming baths, Turkish baths, etc. The author, Walter Jones, is an Englishman, an expert at the manufacture and installation of practical heating apparatus, and the book is made up of a series of articles which originally appeared in the *Ironmonger* (a London trade journal), and which

were subsequently published in book form by Crosby, Lockwood & Co., of London. In England this book has passed through two editions, and is now generally considered by the trade as a standard work of reference. It was republished in this country in the *American Artisan*, and now makes its bow to the American public in book form from the Artisan press. The merit of Walter Jones' book lies largely in the fact that he writes from the standpoint of practical rather than theoretical science. His long and successful experience in the work of manufacture and supply in this line has taught him many valuable lessons, which he has embodied in this treatise. The tables, in which the book abounds, giving the quantity of pipe or radiator surface for varying temperatures, were prepared, not theoretically, but at considerable expense, by actual experiment, to suit the varying demands of climate, etc. In short, the work is eminently practical and useful.

BUILDING OUTLOOK.

Office of The Inland Architect,
Chicago, July 10, 1897.

The industrial situation preseuts a few scattering indications of improvement during the past few days. Last year was peculiar in several respects. It was essentially a year of liquidation. This year has been a year of recovery, wherein perhaps very little genuine progress has been made. The limit of reduction of cost of production has been reached. There has been a catching up iu the industries. Production has beeu carefully gauged. Stocks do not weaken prices. Competition is feverish iu all directions, but it permits living margins. A certain expansiou is in progress, but it is carefully measured. Healthful conditions prevail, but there is no excess of trade vitality. Taking our leading industries iu review, we find that the builders are not crowded. In some cities and iu some localities excellent returns are made, but averaging results all around, this year has not been especially good. Buildiug material is substantially the same in price as last year, though some markets show fluctuations. Iron and steel are slightly lower. Lumber and lumber products are also shaded for cheap work, though not for fine work. Furuiture rules about the same in the lower grades. Work on fixtures, wall japanning, plumbing, is put in at about the same figures. There have been no special changes iu rates of labor. We have been singularly and fortunately free from labor agitations. At this time the sky is clear of clouds.

SYNOPSIS OF BUILDING NEWS.

Architects are invited to furnish for publication in this department monthly or occasional reports of their new work before the letting of contracts. Reports of buildings costing less than $5,000 are not published.

Chicago, Ill.— Architects Holabird & Roche: Made drawings for a handsome golf and polo clubhouse, to be erected at Glen View, Illinois; it will be a two-story and basement building, 112 by 140 feet in size; of beams, brick and plaster, have hardwood fiuish, plumbing, electric light, cement work, heatiug, etc.; it will have a diuing room 60 by 30 feet, louuging room 30 by 32 feet, café 20 by 32 feet, locker rooms, kitchen and dining room for servants, fine toilet rooms, store rooms, etc.

Architect Frank B. Newell: Made plans for a two-story, basement and attic resideuce, 32 by 56 feet in size; to be erected at 5548 South Park avenue; it will have a Portage stone front, tile roof, nickel-plated plumbing, gas and electric fixtures, mantels, sideboards, consoles, furuace, electric bells, etc.

Architects Woollacott & Co.: Have completed the drawings for the First Baptist church, 75 by 150 feet in size; to be erected at Columbus, Ohio; it will be of stone with slate roof, have oak interior finish, pews, stained glass windows, steam heating, electric light, etc.

Architect Paul Gerhardt has finished plans for a pretty two-story, basement and attic residence, 30 by 60 feet in size; to be erected at 157-159 Jaussen avenue, for Joseph Zangerle; it will be of frame constrnction with brick basement, have hardwood finish, mantels, gas fixtures, furnace, uickel-plated plumbing, etc. Same architect made plans for two-story addition to flat building at 1197 Fremont street, for Charles Joseph; to have Portage stone front, oak interior finish, heating, gas fixtures, mantels, etc. Also finished drawiugs for a three-story and basement apartment house, 41 by 50 feet in size; to be erected at Larrabee street; to have a front of buff Bedford stoue and pressed brick, hardwood finish, copper bays and cornice, gas fixtures, mantels and sideboards, steam heating, Georgia pine finish, etc.

Architect George L. Pfeiffer: For F. J. Dewes, a two-story and basement gymuasium and hall building, 91 by 112 feet in size; to be erected at 770 West Chicago avenue; to have a pressed brick and stone front, hardwood finish, the modern open plumbing, gas fixtures, steam heating, etc.

Architect Wesley A. Arnold has just completed plans for the Presbyterian chapel, to be erected at Michigan City, Indiana; it will be of stone and pressed brick, have plumbing, heating, etc. For Charles Porter he made plans for a two-story, basement and attic frame residence, to be erected at River Forest; it will have a stone basement, oak finish, electric light, the best of plumbing, hot-water heating, mantels, sideboards, etc. Same architect made plans for the Congregational church, to be erected at Sterling, Illinois; it will be of pressed brick with slate roof, have oak finish, electric light, heating, etc., and cost $19,000.

Architect Richard E. Schmidt: For Joseph Theurer, a very handsome residence, 44 by 71 feet in size; to be erected at the northwest corner of Lake View avenue and Arlington place; the basement will be of brownstone and the remainder of terra cotta with terra cotta cornice and copper roof; to be of steel construction and fireproof, have elegant hardwood interior fiuish, mosaic floors, marble wainscoting, electric light, hot-water heating, etc.

Architect L. G. Hallberg: Made plans for remodeling two-story school building into a modern flat building, at Marshfield avenue near Wabansia avenue; will put in new plumbing steam heating, gas fixtures, mantels, etc.

Architect Alfred Smith: For Mrs. Rosa Chapman, a two-story residence, 41 by 61 feet in size; to be erected at Wood street near Madison street; to be of stoue front, have hardwood finish, mantels, sideboards, steam heating, modern plumbing, etc.

Architect Myron Hunt: For Harvey B. Hurd, a two-story, basement and attic residence, 33 by 60 feet in size; to be erected at Davis street and Ashland avenue, Evanston; to be of frame with brick basement have oak interior finish, gas fixtures, mantels, gas ranges, furnace, electric bells, speaking tubes, etc. For A. S. Van Dasen, a two-story, basement and attic residence, 32 by 50 feet iu size; to be erected at 1613 Wesley avenue, Evanston; it will have California redwood siding, oil finish, with colored plaster soffits, shingle roof, quarter-sawed oak interior finish, first floor, the rest stained whitewood; will put in all nickel-plated plumbing, gas fixtures, ranges and fireplaces, furnace, etc. Also a two-story, basement and attic frame residence, 30 by 50 feet in size; to be erected at South Evanston; to have a brick basement, oak finish for the interior, mantels, sideboards, gas fixtures, the best of plumbing, furnace, laundry fixtures, etc. For Carl R. Latham, a two-story frame house, to be erected at Wilmette; brick basement, Dutch gambrel roof, to be finished in flat sawed oak, Flemish finish, have modern plumbing, gas fixtures, furnace, mantels, sideboards, etc. Also made plans for a temporary schoolhouse, to cost $5,000; to be erected at Evanston by Carl Anderson, and rented to School Board; it will be called the Emerson Street School; it will be two stories, 50 by 60 feet in size, of brick, and will be converted into stores and flats later on. Also just finishing up ten houses in Rogers Park for J. V. Farwell.

Architects Bishop & Colard: Made plans for five two-story residences, to be erected at 4442 to 4450 Prairie avenue, by Messrs. Clark & Trainer; they will be of pressed brick stone fronts, have all the modern sanitary improvements, mantels, sideboards, gas and electric fixtures, steam heating, gas ranges and fireplaces.

Architect H. H. Richards: For C. McLouth, a two-story flat and two-story residence, to be erected at Sixty-sixth street and Champlain avenue; to have a front of buff pressed brick, with buff Bedford stone trimmings, hardwood interior finish, mantels, sideboards, gas and electric fixtures, gas ranges and fireplaces, the modern open plumbing, steam heating, electric light, laundry fixtures, cement work, etc. Also prepared drawings for a three story apartment house, 50 by 132 feet in size, to be erected at 5531 Indiana avenue; it will have a front of pressed brick, stone and terra cotta, hardwood interior finish, mantels, sideboards, gas and electric fixtures, gas ranges and fireplaces, the best of modern plumbing, steam heating, electric light, laundry fixtures, electric bells and speaking tubes. For J. P. Townley, a two-story and basement flat buildiug, 22 by 81 feet in size, to be erected at Washtenaw avenue near Lake street; to be of buff Bedford stone front; have the modern sanitary plumbing, gas fixtures, mantels, sideboards, oak and Georgia pine interior finish, electric bells, etc. Also three-story flat building, 25 by 72 feet in size, to be built at Western avenue near Monroe street; to have a front of pressed brick with Bedford stone trimmings oak interior finish, mantels, sideboards, gas and electric fixtures, steam heating, laundry fixtures, marble and cement work, etc. Also making sketches for a three-story apartment house, 50 feet front; to have a pressed brick stone front, modern plumbing, gas and electric fixtures, hardwood finish, mantels, sideboards, etc.

Architect Dan Everett Waide has commenced work on the Seventh United Presbyterian Church, at Congress street and Central Park boulevard; it will be 100 by 106 feet in size, including church, Sunday school and parsonage; it will be of stone front and slate roof, have hardwood finish, gas fixtures, plumbing, heating, etc. Same architect reports having commenced work on the Sixth United Presbyterian Church, at Sixty-second street and Woodlawn avenue; it will be 100 by 116 feet in size; of pressed brick and stone, with slate roof, pews, stained glass windows, electric light, steam heating, etc.

Architect C. A. Strandel: For M. Larsou, a two-story, basement and attic residence, 23 by 40 feet in size; to be built at Wilton avenue; it will be of frame construction with stone basement, have oak finish, mantels, sideboards, gas fixtures, nickel-plated plumbing, gas ranges, hot-water heating, electric bells, etc. Also three story and basement flat building, 25 by 60 feet in size; to be erected at Rokeby street. It will have a buff Bedford stone front, oak and Georgia pine interior finish, mantels, sideboards, furnaces, gas fixtures, electric bells, speakiug tubes, gas ranges and fireplaces, etc.

Architect Frederick Foehringer: For Mrs. Catherine Sampsou, a two-story flat building, 25 by 66 feet iu size; to be erected at Sheffield avenue, near Grace street; to have a pressed brick front with buff Bedford stoue trimmiugs, oak finish for interior, copper cornice and bay windows, mantels, sideboards, furnaces, gas fixtures, gas ranges, electric bells. For Mrs. Horan Horan, a three-story frame flat building, to be erected at Roscoe boulevard; it will have Georgia pine finish, mantels, furnace, gas fixtures.

Architect Adolph Druiding: Making glans for St. Mary's church, 60 by 145 feet iu size; to be erected at Kaukauna, Wisconsin; it will be of pressed brick with stone trimmings, have oak finish, pews, steam heating, electric light, handsome stained glass windows, etc. Same architect has completed drawings for St. Joseph's church, 70 by 120 feet in size; to be erected at Erie, Pennsylvania; pressed brick and stone, slate roof, oak finish, pews, stained glass windows, steam heating, electric light, marble work, plumbing, etc. Also two-story parsonage; to cost $8,000; to be erected at Huntingtou, Iowa; pressed brick and stone front, hardwood finish, gas fixtures, steam heating, mantels, sideboards, etc.

Architect B. B. Stevens: For John J. Markham, a four-story flat building, 25 by 81 feet in size: to be erected at Garfield boulevard aud Wentworth avenue; to be of buff Bedford stone front, have hardwood finish, mantels and sideboards, steam heating, gas fixtures, electric bells, laundry fixtures. For E. J. Burnside, a two-story, basement and attic frame residence, 24 by 48 feet in size; to be built at Ripou, Wisconsin; it will have a stoue basement, oak and Georgia pine interior fiuish, mantels and sideboards, gas fixtures, furnace, laundry fixtures, gas ranges and fireplaces, cement basement and sidewalks, etc.

Architects Higgins & Levy: For J. J. Rigney, two two-story residences, to be erected at Forty-fifth street aud Park avenue; they will have buff Bedford stone fronts, oak finish and hardwood floors, gas and electric fixtures, steam heating, electric light, the modern nickel-plated plumbing, etc.

Architect Frederick Ahlschlager: For Mrs. Rosa Homer, a four-story and basement apartment building, 50 by 95 feet in size; to be erected at 4115 to 4117 Indiana avenue; it will have a front of buff Bedford stone, hardwood finish, steam heating, gas aud electric fixtures, gas ranges and fireplaces, marble wainscoting, etc.

Architect Albert S. Hecht: For Willis McGerald, a two-story, basement and attic residence, 28 by 36 feet in size; to be built at Fairview avenue and Willow streets; stone basement, cream colored pressed brick above, hardwood finish, mantels, sideboards, hot-water heating, gas fixtures, gas ranges, etc.

Detroit, Mich.—Architect Gustav A. Mueller: For James Parshall, five-story business block, buff pressed brick front, with buff sandstone and terra cotta trimmings; size 30 by 100 feet; cost $40,000. For John E. Runge, three-story double brick stores and residence flats front of buff pressed brick and sandstone trimmings; cost $12,000. For Detroit Water Works, new greenhouse; cost $8,000.

Architects Spier & Rohns: For Christ Protestant Episcopal Society, gothic church edifice stone columns, stained glass wiudows, etc.; size 63 by 100 feet; cost $18,000; three-story residence of buff Ohio sandstone and pressed brick, tile roof, fiuished throughout with hardwoods; size 60 by 60 feet; cost $20,000.

Architect George W. Myers: For Birnie G. Chappee, three-story brick and stone residence, with slate roof; size 30 by 27 feet; cost $5,000.

Architect R. Arthur Bailey: For J. Henry Smith, three-story residence of brick and frame with stone foundation; cost $5,000.

Architect F. J. Grenier: For Charles Myers, two-story brick residence, cut stone trimmings and ornamental brick; cost 6,000.

Architect William H. Whipple: For William B. Bierce, two-story frame residence; $5,200.

Architects Masou & Rice: For James Joy, brick and stone residence; cost $18,000.

Architects E. A. Walshe & Son: For Anthony P. Schulte, two-story brick veneered residence; cost $5,000.

Architect S. C. Falkinburg: For Henry H. Valpey, three-story brick veneered residence, with pressed brick front and stone trimmings; cost $5,000. For Cook Hotel, Ann Arbor, addition, four stories high, of brick; size 53 by 62 feet; $5,000.

Architects Rogers & MacFarlane: For William P. Harris, brick and frame residence; size 55 by 62 feet; cost $15,000. For John Owen, two-story brick stable; cost $6,000.

Architects A. C. Varney & Co.: For Howard B. Anthony, two-and-one-half-story brick residence, with stone trimmings and slate roof; cost $7,000.

Architect Joseph G. Kastler: For Henry Fey, two-story brick store, with front of roman pressed brick and sandstone trimmings; cost $5,000.

Springfield, Ill.—George H. Helmle has been appointed architect and superintendent for the remodeling of the Executive Mansion. Amount appropriated, $30,000, which is to be expended for heating, plumbing, fresco painting, marble and tile work, alterations, roof, electric lighting, cornice and stone porch. George H. Helmle awarded a contract for building four stores and flats for Dr. Thomas W. Dresser to Simpson McKee. The building is to be 80 feet front, 67 feet deep, two stories and basement in height. To be heated with steam, and to be provided with all modern conveniences. Cost $16,000.

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ED. H. A. VOLKMANN, Architect, Insurance Exchange Building, St. Louis, Mo.

ARCHITECTURAL PRIZE COMPETITION.

The Society of Beaux Arts Architects is holding its annual exhibition of prize-competition drawings at the rooms of the Architectural League, No. 215 West Fifty-seventh street. The medal itself, which forms the prize, is, of course, the most interesting part of the exhibition, being the work of a very able sculptor who has given much of his time and thought to decorative work, Mr. Philip Martiny. This medal is now nearly completed, and there hang in the gallery that copy whose reverse bears the name of S. M. Mann, for the prize of December, 1894; that bearing the same name, for February, 1895; that which was awarded to E. J. Willingale, and that to A. M. Githens, for December, 1895, and that which was won by Albert H. Spahr last April. This obverse is a spirited arrangement of the familiar tablet, torch, and laurel wreath; the reverse bears a very well composed, heavily draped female figure, seated on a capital, and holding an unrolled plan which she is studying. The medal is unusually large, nearly nine inches in diameter.

The problems given out this year were a mortuary chapel and a ferry-house. The merits and demerits of the designs are, of course, not to be judged as those of designs for buildings; these drawings are academic studies, not to be rightly appraised except by those who are or have been students in the same way of highly artificial training. The public may, however, find a real interest in seeing here how the École des Beaux Arts of Paris and the ateliers thereupon depending do their work.

THE FALLS OF ST. ANTHONY HARNESSED.

The contract for the electrical utilization of the Falls of St. Anthony, at Minneapolis, has been awarded to the General Electric Company.

It will be remembered that the St. Anthony Water-Power Company, and the Pillsbury flour mills and elevator lines were merged into the Pillsbury-Washburn Flour Mills Company, which controlled not only most of the developed water-power of the Falls, but also the undeveloped water-power below the Falls. A dam to utilize this power was constructed and the total available is calculated at 10,000 horse-power.

The water will pass through turbines of Stillwell Bierce-Smith Vaile manufacture, seven of which, each of 1,000 horse-power capacity, will form the initial hydraulic equipment. The electrical equipment will cousist of a plant comprising both direct-current railway apparatus for the needs of Minneapolis, and three-phase apparatus for trausmission of part of the power to St. Paul, ten miles distant.

The direct-current portion consists of two 700-kilowatt General Electric multipolar generators, with a speed of 130 revolutions per minute, furnishiug current at 600 volts, and two 100-kilowatt exciters for the three-phase alternators.

The three-phase generating plant consists of five 700-kilowatt alternators with a frequeucy of 35 cycles, and an initial voltage of 3,450 volts. This pressure will be raised to 12,000 volts in six step-up transformers of the well-known air-blast type, and at this voltage the current will go to St. Paul either by overhead or underground wires. This has not yet been settled. At St. Paul the pressure will be reduced in fifteen step-down transformers, when the current will be led into the rotary converters of special type. Of these there will be five. They will resemble in appearance those which the General Electric Company has installed iu the power house of the Buffalo Street Railway Compauy, to take care of the power transmitted from Niagara Falls. They are eight-pole machines, each of 600-kilowatt capacity, running at 520 revolutions and turning out direct current at 580 volts. They are designed to operate in parallel with each other, or with the generators now driven by steam in the existing station.

The water-power development and the electric plaut completed by the Pillsbury-Washburn Company will be operated by the Twin City Rapid Transit Company, a lease having been made between the two companies to that effect. The street car company will seud to St. Paul about 3,000 horse-power, leaving 4,000 horse-power to be used at Minneapolis.

When the new power is set to work running the street cars the street railway company will dismantle the Thirty-first street power station, using the room for other purposes. They will continue the main power station at Third avenue north and Second street, and also the power station in St. Paul. These will be kept ready for emergencies, such as a breakdown, a sudden call for extra power and similar occasions. In case there is water enough and conditions are favorable there are still three more units to be installed at the dam.

TRADE NOTES.

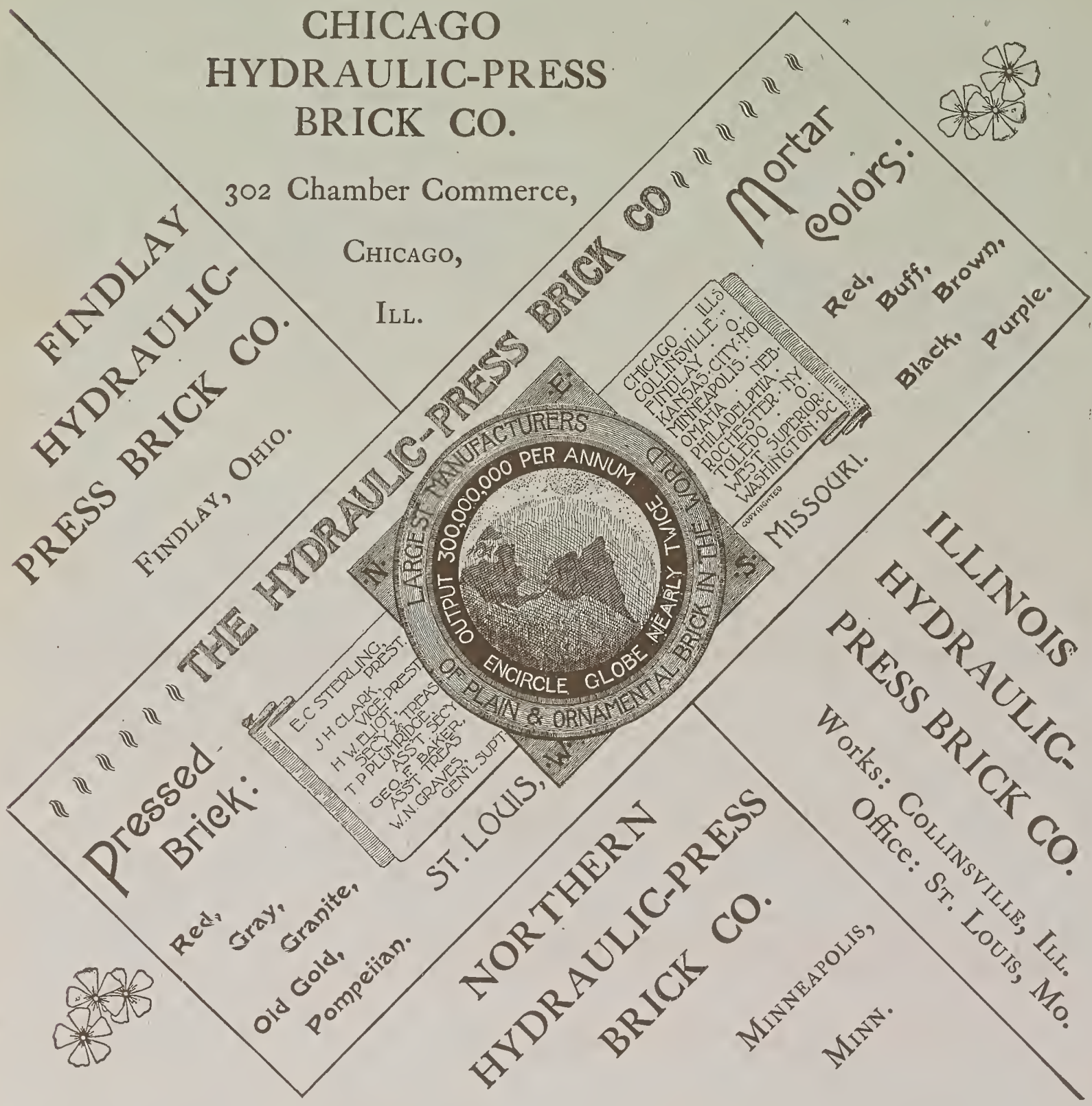
LARGE consumers of fuel in the eastern part of the State of Pennsylvauia and other sections, where large piles of culm are available, are coming to a realization of the fact that this material can best be consumed by the introduction of fans. A steam jet-blower does not afford the highest ideal or most economical arrangement. The Buffalo Forge Company installed one of their forced draft plants for the Williamsport Steam Company, Williamsport, Penusylvania, several years ago, and are now in receipt of the following letter: "Replying to your request of the 15th, would say, that we are well pleased with the forced draft system furnished by you. It has proved itself to be a great saver in fuel expenses, aud we would cheerfully speak well for the system to anyone making inquiries."

THE American Radiator Company has long been one of the largest manufacturers of boilers for other firms in this country. At the company's plant in Detroit unequaled facilities for this class of work are provided. They have but recently entered upon the manufacture and sale to the trade direct of house-heating boilers, and they now ship from Detroit both boilers and radiators—an arrangement manifestly advantageous to customers. The type of boilers made by the American Radiator Company is known as the "Ideal." The line comprises both round and square fire-pot boilers, and includes every possible size and style desired. These boilers have attained an unparalleled degree of popularity iu the few years they have beeu upou the market, having been used and highly indorsed by the most representative firms in the trade everywhere. The "Ideal" sectioual boiler deserves especial attention, because it is desigued for use in large heating systems where the conditions have heretofore demanded the use of the old style tubular or fire-box boiler. Features have been introduced in the "Ideal" which have uever before been employed in the manufacture of this type, making it convenient to install, easy to operate, and economical in the consumption of fuel. The subject of steam and hot-water heating is at all times interesting to the architect and builder. Some uew and valuable points can be obtained from a perusal of the American Radiator Company's latest brochure on the subject of "Ideal" boilers.

KEEPING coustantly at it seems to be the secret of Jenkins Bros.' success as manufacturers of valves and packing. Their new 1897 price list, just issued, shows many improvements in their steam specialties. The Jenkins Bros.' valves, manufactured by them, are their special pattern. They contain many improvemeuts, aud are made of the best steam metal. Their iron body valves have beeu improved by increasing the thickness of flanges and adding more bolts, making them suitable for either high or low steam pressure. The Jenkins disks have been greatly improved, to staud high pressure steam, as has also the Jenkius staudard packing. The 1897 price list is a book of eighty pages, fully illustrated, and containing much matter of interest to all users of steam power. It is a good example of a trade publication from which the intelligent reader can glean many interesting and instructive facts relative to the construction and operation of machinery.

THE Buffalo Forge Company, Buffalo, New York, recently received an order for an apparatus to be used for what is probably the largest glue dryer in the world. It involves the use of three steel-plate fans, 170 inches tall, having inlets 79 inches in diameter, outlets 63½ by 70 inches wide. The wheels inside the fan casings are 120 inches diameter by 66½ inches wide at periphery. Each one of these fans is driven by a 12 by 14 horizontal self-contained center-crauk engine of the Buffalo Forge Company's make. Each one of these fans will deliver at its outlet 150,000 cubic feet of air per minute at 1 ouuce pressure. Each fan is to be supplied with a heater of appropriate size. When it is taken into consideration that the combined capacity of these fans is 450,000 cubic feet of air per minute, it may at once be seen that the size of the glue dryer is, undoubtedly, the largest one ever erected. The outfit will be installed into the works of Delaney & Co., Philadelphia, Pennsylvania, under the specifications of Francis Brothers & Jellett, the well-known engineering firm of Philadelphia, Pennsylvania.

A "HISTORY OF PAINTS, PIGMENTS AND COLORS" is the latest publication of Heath & Milligan Manufacturing Company, of Chicago. It is a unique little volume, no effort having before been made to compile the multitude of facts which make up the history. It is the work of John McGovern, whose talent as a student and compiler bids fair to outshine the enviable reputation he has made as a newspaper man and author. The history enters exhaustively into the many points which go to make up present knowledge of paints and colors, each fact being treated in the epigrammatic style which Mr. McGovern has made his own. From the time of its publication the "History of Paints, Pigments and Colors" is standard, it being estimated that two thousand other publications must be searched to furnish the information contained in the little volume. Anyone interested in the subject can obtain the history free.



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